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Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes

Note by the Secretariat

In recent years, numerous cases have called into question the adequacy of State measures to protect human rights from toxics, in particular children's rights.

The intoxication of children with lead-contaminated drinking water raised questions of race, poverty and discrimination. The deadly impact of an untested consumer product on pregnant women and children laid bare the magnitude to which industries fail to conduct reasonable amounts of due diligence, and the failure of States to require basic information on health and safety. Poisonings around the world by pesticides, extractive industries and industrial emissions to air and water — and their crippling impacts on the health, development and life of children — reinforce the need for strong measures to protect those most at risk.

However, the problem is not limited to poisoning. Childhood exposure is a systemic problem everywhere. All around the world, children are born with dozens, perhaps hundreds, of hazardous substances in their bodies. This is leading to what doctors are referring to as a "silent pandemic" of disease and disability affecting millions during childhood and later in life. For a number of reasons, children are left without access to an effective remedy or justice for the harms of toxics and pollution, which enables perpetrators to remain unaccountable. Prevention of exposure is the best remedy. The best interests of the child must be a primary consideration of States in protecting children's rights to life, survival and development, physical integrity, health, being free from the worst forms of child labour, and also to safe food, water and housing, and other rights implicated by toxics and pollution that are enshrined in the Convention on the Rights of the Child. States have a human rights obligation and businesses a corresponding responsibility to prevent childhood exposure to toxic chemicals and pollution.

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I. Introduction

1. In the present report, the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes examines the impacts of toxics and pollution on children's rights, and the obligations of States and responsibilities of businesses in preventing exposure by children to such substances, in accordance with Human Rights Council resolution 27/23. The Special Rapporteur has held a broad consultative process with States, international organizations, civil society, national human rights institutions and other stakeholders. He is grateful for all the responses to a questionnaire on the subject.[1]

II. The "silent pandemic"

2. Children everywhere are suffering from the impacts of toxics and pollution. These impacts materialize in different forms, at various stages of life, and from a myriad of routes of exposure. Children have higher levels of exposure and are also more sensitive to it, which makes them more vulnerable than adults. Such impacts can be irreversible and can even be passed down from one generation to the next.[2]

3. The World Health Organization (WHO) estimates that over 1,700,000 children under the age of 5 died in 2012 from modifiable environmental factors, such as air pollution (over 500,000 deaths) and water contamination.[3] This figure accounts for 26 per cent of the deaths of children under 5 years of age.

4. However, the 1,700,000 deaths are only the tip of the iceberg. There is a "silent pandemic"[4] of disability and disease associated with exposure to toxics and pollution during childhood, many of which do not manifest themselves for years or decades. Child victims may die prematurely after the age of 5 or be debilitated throughout their lives. Toxic chemicals that interfere with the normal expression of genes, brain development, the function of hormones and other processes necessary for children to grow into healthy adults pervade our economies and persist in our environment.[5]

5. Children are born "pre-polluted"[6] with numerous contaminants that impact on their rights to survival and development, to be heard, to physical integrity and to the highest attainable standard of health, to name but a few. Representative studies have measured at least dozens,[7] if not hundreds,[8] of toxic and otherwise hazardous chemicals in children

[1] All submissions are available from www.ohchr.org/EN/Issues/Environment/ToxicWastes/Pages/TheRightsoftheChildandHazardousSubstancesandWastes.aspx.

[2] Committee on the Rights of the Child, general comment No. 16 (2013) on State obligations regarding the impact of the business sector on children's rights, para. 4 (a).

[3] WHO, *Preventing Disease through Healthy Environments* (2016).

[4] Philippe Grandjean and Philip J. Landrigan, "Neurobehavioural effects of developmental toxicity", *The Lancet Neurology*, vol. 13, issue 3.

[5] See, for example, United Nations Environment Programme (UNEP) and WHO, *State of the Science of Endocrine Disrupting Chemicals 2012*.

[6] National Cancer Institute (United States), "Reducing environmental cancer risk" (2010).

[7] "International Federation of Gynecology and Obstetrics opinion on reproductive health impacts of exposure to toxic environmental chemicals", *International Journal of Gynecology and Obstetrics*, vol. 131, issue 3.

[8] Environmental Working Group, "Body burden: the pollution in newborns".

before birth through their mother's exposure. Exposure to toxics and pollution (toxics)[9] continues incessantly after birth. While the studies primarily come from certain countries, every child is a victim of this "toxic trespass", in varying degrees.

6. Children in low-income, minority, indigenous and marginalized communities are at more risk, as exposure levels in such communities are often higher and are exacerbated by malnutrition, with the adverse effects inadequately monitored. Hence, questions arise of "environmental racism" and "environmental injustice" that undermine human dignity, equality and non-discrimination. The situation regarding childhood exposure in developing countries is already known to be grave, however the actual magnitude of impacts is still insufficiently measured.[10]

7. This assault on children's rights is largely invisible. Toxics contaminate air, water, food, playgrounds, houses, schools and other sources of exposure, contrary to the child's right to adequate housing and safe food, water and play, producing deadly or lifelong impacts on mental and physical health. Missing information about who manufactures, sells, uses, trades in, releases or disposes of hazardous substances is compounded by information deficits on the health risks and impacts of exposure,[11] enabling perpetrators to evade accountability.

8. Many factors contribute to children being exposed around the world. Policies that prioritize businesses' instead of children's best interests, gaps in legislation,[12] outrageous failures to enforce existing laws,[13] the lack of capacity for monitoring and oversight, corporate misinformation campaigns,[14] fragmented governance[15] and disengaged health and labour ministries[16] are but a few of the problems that leave children in both the wealthiest and the poorest countries bearing the brunt of an assault from toxic chemicals and pollution.

9. Cancer now figures among the leading causes of morbidity and mortality worldwide, with approximately 14 million new cases of cancer and 8.2 million cancer-related deaths in 2012.[17] The incidence of childhood cancer has risen during periods of rapid increase in the use of industrial chemicals; this increased incidence cannot be explained by genetics or lifestyle choices alone.[18] The incidence of testicular, breast and other cancers that may be triggered by childhood exposure to toxics has also increased in recent decades. Six hundred thousand children develop irreversible intellectual disabilities every year, from lead alone.[19] Beyond lead, an untold number of neurotoxicants are believed to be eroding intelligence, and contributing to developmental abnormalities and behavioural disorders. Type 2 diabetes, which was previously seen only in adults,[20] is predicted to be the seventh leading

[9] In the present report, "toxics" refers to all types of hazardous substances and wastes that may constitute a threat to children, including pollution, toxic chemicals, radioactive substances, explosives, and others.

[10] A/HRC/30/40.

[11] Danish Environmental Protection Agency, *Exposure of Pregnant Consumers to Suspected Endocrine Disruptors*, p. 7; UNEP, *Global Chemicals Outlook* (2012); and A/HRC/30/40.

[12] Submissions from Uzbekistan (noting the need for a clear legal framework) and Loyola University Chicago.

[13] See joint letter of allegation (footnote 13 above).

[14] See, for example, www.chicagotribune.com/ct-met-citizens-for-fire-safety-20120902-story.html.

[15] Submission from International Service for Human Rights, p. 5.

[16] A/HRC/30/40/Add.1, A/HRC/33/41/Add.1 and A/HRC/33/41/Add.2.

[17] WHO, cancer fact sheet, No. 297 (2015).

[18] National Cancer Institute (United States of America), Surveillance, Epidemiology and End Results programme, monograph (1999).

[19] WHO, lead poisoning and health fact sheet, No. 379 (2014).

[20] WHO, diabetes fact sheet, No. 312 (2016).

cause of death of children by 2030. Asthma is one of the most common chronic diseases among children, with rates rising by 50 per cent every decade on average.[21] Sperm counts and testosterone levels have fallen dramatically among men since the 1940s, suspected to be linked to endocrine (hormone)-disrupting chemicals.[22] These are some of the health impacts linked with exposure to toxic chemicals and pollution.

10. Some States have recognized these grave risks and are prioritizing the issue of childhood exposure to toxics. However, the issue is often reduced to a question of cost versus benefit, with human rights considerations divorced from and inconsequential to the equation. Prevention measures taken by States are increasingly outpaced by scientific evidence of grave impacts, the rapid acceleration in toxic chemical production and use[23] and inadequate chemical and waste treaties to protect children.[24] With the melting of arctic ice as a result of global warming, toxics released by past generations but sequestered are increasingly being liberated and are entering the food chain and water supplies.[25]

11. There is clear evidence that more precaution is warranted globally in protecting children from exposure.[26] Despite tests being available to identify chemicals that may affect the health of children, tens of thousands of industrial chemicals have not been tested for such impacts. Furthermore, regulators assess the likelihood of harm from toxics on the basis of the exposure of an average adult to a single substance, not on the basis of real-life conditions, as children are exposed to multiple substances (that may result in combination effects) during sensitive periods of childhood development.[27] Businesses implicated insist that exposure levels are too low to produce adverse impacts, without providing evidence of safety for children who may be exposed to multiple toxics during their development.

12. Most children whose lives are irreversibly or fatally altered by toxics and pollution have no access to an effective remedy. The burden is placed on children to prove that a toxic chemical was the cause of their injuries, not on the businesses that profit from these activities to prove that they do no harm.[28] The evidentiary burden is noted to be "very effective against the victims".[29] Even unquestionably toxic sites of contamination, whether from the dirty legacy of businesses or the toxic remnants of war, escape remediation and accountability that could prevent future human rights violations.

13. The economic costs borne by governments and the public, externalized by businesses to a large degree, are estimated to range from hundreds of billions to trillions of United States dollars for selected toxics.[30] The use of lead in paint is estimated to cost low- and middle-income countries $1 trillion in health-care expenses, lost productivity and other

[21] WHO, bronchial asthma fact sheet, No. 206 (2015).

[22] Submission from Denmark.

[23] UNEP, *Global Chemicals Outlook*.

[24] Less than thirty out of thousands of hazardous substances are regulated from production to final disposal under global treaties on chemicals and wastes.

[25] UNEP and Arctic Monitoring and Assessment Programme, "Climate change and POPs: predicting the impacts" (2011).

[26] Submissions from Italy and Denmark. See also European Commission Scientific Committees, opinion on toxicity and assessment of chemical mixtures (2011).

[27] European Commission Scientific Committees, opinion on toxicity. Submissions from Colombia and Denmark.

[28] Submissions from Denmark (noting that "the issue of causation for human health effects as a result of chemicals exposures is extremely difficult to establish, and only exists from sporadic knowledge following chemical accidents, occupational exposures and for some pharmaceutical uses"), from Sweden and from PAX and the Center for Constitutional Rights.

[29] Submission from Senegal.

[30] UNEP, *Costs of Inaction on the Sound Management of Chemicals*.

economic costs.[31] Endocrine-disrupting chemicals in food and cosmetics and from other sources are estimated to burden the European Union with over €100 billion in economic costs per year, and there is inadequate information to estimate the costs externalized on developing countries.[32] Hazardous pesticides are estimated to cost sub-Saharan Africa more than the official development assistance it receives per year.[33]

14. The problem is increasingly criminal in nature. The illegal disposal of waste across borders is an ongoing problem.[34] The International Criminal Police Organization (INTERPOL) notes that between 60 and 90 per cent of electronic waste is disposed of illegally.[35] The illegal use of banned pesticides and toxic chemicals, as well as of counterfeit products, continues to be a major problem globally, a serious threat to children of the workers affected, to communities and to consumers. Recent estimates show that the global market for illegal pesticides may have doubled between 2007 and 2011.[36] And yet, human rights defenders seeking to protect children from further exposure to toxics are harassed, imprisoned or even killed.[37]

15. Tens of millions of children are engaged in hazardous work, where they are often exposed to toxic chemicals.[38] For example, children around the world continue to work in artisanal and small-scale mines, where they are exposed to mercury and other toxic chemicals.[39] The United Nations Children's Fund (UNICEF) has estimated that 40,000 children toil in mines, extracting a known carcinogen (cobalt) to be used in cell phones, laptop computers and cars by companies that undoubtedly have resources for human rights due diligence.[40] Children working in agriculture continue to use hazardous pesticides despite the bans on such products in several countries, raising questions of double standards and discrimination.

16. Toxic remnants of war inflict pain and suffering on communities long after the conflicts have concluded. In Iraq, independent studies suggest that birth defects have increased dramatically among children in conflict areas, who in many cases do not have access to medical care and treatment.[41] Unexploded munitions, landmines, chemical weapons, pesticides, and other hazardous remnants of war and conflict persist worldwide.[42]

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[31] Teresa Attina and Leonardo Trasande, "Economic costs of childhood lead exposure in low- and middle-income countries", *Environmental Health Perspectives, Children's Health*, vol. 121, issue 9.

[32] Leonardo Trasande and others, "Estimating burden and disease costs of exposure to endocrine-disrupting chemicals in the European Union", *Journal of Clinical Endocrinology and Metabolism*, vol. 100, No. 4.

[33] UNEP, *Global Chemicals Outlook*.

[34] UNEP, *Waste Crimes – Waste Risks: Gaps in Meeting the Global Waste Challenge* (2015).

[35] Ibid. p.7, and INTERPOL, *Countering WEEE Illegal Trade Summary Report* (2015).

[36] From 5-7 per cent to 10 per cent, according to OECD estimates; see also the United Nations Interregional Crime and Justice Research Institute report entitled "Illicit pesticides, organized crime and supply chain integrity", p. 11.

[37] Submission from International Service for Human Rights, and Global Witness, *On Dangerous Ground* (2016).

[38] Submissions from Italy and Peru; and International Labour Organization (ILO), *Children in Hazardous Work: What We Know, What We Need To Do* (2011).

[39] Submission from Human Rights Watch.

[40] Amnesty International, "This is what we die for" (2016).

[41] Submission from PAX and the Center for Constitutional Rights; and UNEP and Environmental Law Institute report entitled "Assessing and restoring natural resources in post-conflict peacebuilding" (2013).

[42] Submission from Colombia.

III. State obligation to prevent childhood exposure

17. Four principles guide the interpretation and implementation of the Convention on the Rights of the Child. States must take these into consideration when designing, implementing and enforcing public health, environmental and labour laws to protect children's rights from toxics and pollution.

18. The Convention on the Rights of the Child makes it clear that States have an obligation to prevent exposure to toxics by children, as well as by women of reproductive age.[41]

A. Best interests of the child

19. The best interests of the child — including future generations who will inherit the toxic legacy of previous generations — must be a "primary consideration" in the interpretation and implementation of the rights enshrined in the Convention on the Rights of the Child (art. 3, para. 1). States parties must integrate and apply this guiding principle and substantive right "in all actions", including legislative, administrative and judicial proceedings that relate to toxic substances or pollution, bearing in mind children's unique vulnerabilities to toxics, pollution, and known and unknown risks factors. States should be in a position to explain and be held accountable for how they respected the right of present and future children to have their best interests considered in decision-making, including how this right has been weighed against other considerations.[42]

20. States must pursue the "full implementation" of the child's right to health, and must be guided by the right of the child to have his or her best interests taken into account as a "primary consideration" when considering "the dangers and risks of environmental pollution" to health.[43]

21. The best interests of the child are best served by preventing exposure to toxic chemicals and pollution, and taking precautionary measures with respect to those substances whose risks are not well understood. Unfortunately, industrial competitiveness, risk management options and cost-benefit considerations are prioritized over the best interests of the child.

B. Right to be heard

22. The right to be heard is a guiding principle of the Convention on the Rights of the Child, and is inextricable from public health and environmental threats such as toxics and pollution.[44] The right is closely linked with the question of consent, and with the phenomenon of children being born "pre-polluted".

[41] Committee on the Rights of the Child, general comment No. 15 (2013) on the right of the child to the enjoyment of the highest attainable standard of health, para. 49. The Special Rapporteur notes increasing evidence of the possibility that exposure by males to toxic chemicals can affect the health of their children.

[42] Committee on the Rights of the Child, general comment No. 14 (2013) on the right of the child to have his or her best interests taken as a primary consideration.

[43] Convention on the Rights of the Child, art. 24.

[44] Committee on the Rights of the Child, general comment No. 12 (2009) on the right of the child to be heard, para. 87.

23. Every child capable of forming his or her own views has the right to be heard and to influence decision-making processes that may be relevant in his or her life.[47] Such views are to be given due weight in accordance with the age and maturity of the child.

24. Critical from a human rights perspective is that children are exposed to harmful substances before they are capable of forming their own opinions, and this is in the period in their lives when they are most at risk from toxic exposures that can lead to the development of associated diseases, disorders and illnesses.

25. When children are capable of forming their views, they are not being heard on important decisions related to toxics and pollution. Article 12 is the key participation right in the Convention on the Rights of the Child, as it recognizes the child as a full human being with the ability to participate in society and in decisions about his or her well-being.

26. While parents and guardians have primary responsibility for the upbringing and development of the child,[48] they are, for many reasons, powerless to protect children from exposure to toxics from a myriad of unavoidable sources. States must prevent childhood exposure, in recognition of the right of present and future generations to be heard.

C. Right to life, survival and development

27. Every child has the inherent right to life and States are duty-bound to ensure to the maximum extent possible the survival and development of the child.[49] A holistic concept of childhood development should include consideration of factors such as freedom from exposure to toxics and pollution, as such exposure can have an adverse impact on the child's physical, mental, psychological and social development.[50] The child's right to life, survival and development is contingent upon the realization of the rights to health, to food, water and adequate housing, and to a healthy environment, as well as to physical integrity and to information.

28. Exposure to toxic chemicals during crucial periods of development can affect the way in which genes are expressed, leading to deadly or adverse developmental outcomes for some children. Often these are not seen at birth, when a seemingly healthy child may in fact have suffered disruptions to his development that may lead to a higher probability of diseases and disabilities later in life, and in many cases premature death. States must prevent childhood exposure to toxics to protect the right of all children to life, survival and development.

D. Right to physical and mental integrity

29. The right to physical and mental integrity is well established under international human rights law.[51] This right encapsulates the right of each human being, including children, to autonomy and self-determination over his or her own body. It considers a non-consensual physical or mental intrusion against the body to be a human rights violation.

[47] Convention on the Rights of the Child, art. 12; see also A/HRC/25/35.

[48] Convention on the Rights of the Child, art. 18.

[49] Ibid., art. 6.

[50] Committee on the Rights of the Child, general comment No. 5 (2003) on general measures of implementation.

[51] Committee on the Rights of the Child, general comment No. 13 (2011) on the right of the child to freedom from all forms of violence.

30. Childhood exposure to toxics occurs without the child's (or parent's) consent. Even if a parent were somehow able to identify every product and possible source of exposure to toxics that might harm their child, they are often powerless to do anything about it, particularly when it involves food, water or air pollution. Young children lack the physical and/or mental ability to vocalize opinions and understand the dangers and potential consequences of toxics until long after harm has been inflicted. This, for example, is why children are not allowed to buy cigarettes or alcohol until a certain age in many countries and are prohibited from working in hazardous conditions.

31. Both the International Covenant on Civil and Political Rights and the Convention on the Rights of the Child protect the physical and mental integrity of children. States must protect children from "all forms of physical or mental violence, injury or abuse, neglect or negligent treatment".[52] The Convention on the Rights of the Child (art. 37) and the International Covenant on Civil and Political Rights (art. 7) require States to protect children from torture and other cruel, inhuman or degrading treatment or punishment.[53] All regional human rights instruments recognize the right to physical integrity.[54]

32. The right to physical integrity is implicated by actions or inactions that give rise to contact, not by whether the contact resulted in adverse health impacts. For example: "The common law over the centuries has always protected individuals from unwanted intentional contacts with their person... The common law action of battery developed out of the law's recognition of an individual's interest in personal autonomy and bodily integrity — that is, the right of a person to participate in and make decisions about his own body."[55]

33. Under international law, no derogation is allowed from the right to physical integrity.[56] Under the American Convention on Human Rights, the right of respect for physical integrity is explicitly non-derogable.[57] Courts have interpreted strictly the right to physical integrity, such that even the medical, life-saving exposure to hazardous substances is a violation of a child's right to physical integrity if without consent. Children have an unqualified right to effective prevention and protection from violence.[58] No form of violence against children is justifiable and all forms of violence against children are preventable.[59]

34. While the right to physical and mental integrity has traditionally been raised in connection with incarceration, interrogation and medical experimentation, this right is implicated by human exposure to toxics. Although acute poisonings and high levels of intoxication present an unquestionable violation of the right to physical integrity, this right also extends to chronic, low-level exposure to toxic substances.

35. The pervasive intrusion of toxics, a phenomenon and legal argument also known as "toxic trespass", raises the question of whether States have taken the right of physical and mental integrity into account in the design of laws and policies. Policies are typically

[52] Convention on the Rights of the Child, art. 19; and Committee on the Rights of the Child, general comment No. 4 (2003) on adolescent health and development in the context of the Convention, para. 8.

[53] Human Rights Committee, general comment No. 20 (1992) on article 7, paras. 2 and 5. See also Committee on the Rights of the Child, general comment No. 4, para. 8.

[54] American Convention on Human Rights, art. 5 (1); Charter of Fundamental Rights of the European Union, art. 3; and African Charter on Human and Peoples' Rights, art. 4.

[55] See *People v. Medina*, 705 P 2d 961 (1985).

[56] Human Rights Committee, general comment No. 20, para. 3.

[57] American Convention on Human Rights, art. 27.

[58] See A/61/299, para. 6.

[59] Ibid, para. 1.

geared towards the risk that accompanies exposure, rather than preventing exposure at the outset.

36. Violence — likewise, torture and cruel, inhuman or degrading treatment — can take many different forms.[60] Incessant exposure to toxics and pollution can be violent, torturous, degrading, cruel and inhumane. Parents of children exposed incessantly to pollution or toxic chemicals bear an enormous level of psychological stress and anxiety, worrying what the impacts may be in the future. Children who live in or around locations of widespread pollution or contamination may be subject to painful harassment and discrimination.[61]

37. States have an obligation to ensure that laws and policies do not permit the production, use, emission or disposal of hazardous substances in a manner that results in children being exposed to them.

38. States must also take active measures to ensure that children are not exposed to chemical substances with unknown properties. States must ensure that individual substances and combinations of substances are well characterized as safe before children are exposed, in order to protect the child from "scientific experimentation"[62] and actions or inactions not in their best interests.

E. Right to an effective remedy

39. States have a duty to ensure that children have access to an effective remedy for violations of their rights, including those due to exposure to toxics.[63] To be effective, remedies should be appropriately adapted for children, taking into account their special needs, risks, and evolving development and capacities.[64] An effective remedy includes (a) the right to equal and effective access to justice; (b) effective and prompt reparation for harm suffered; and (c) access to relevant information concerning violations and reparation mechanism. This includes, inter alia, compensation and satisfaction, rehabilitation and guarantees of non-repetition.[65]

40. The right to an effective remedy requires the remediation of contaminated sites, the cessation of actions or inactions that give rise to impacts, the provision of health care, and the dissemination of information to ensure that parents and children know how to prevent recurrence. Timely reparation to prevent recurrence is essential.[66]

41. Prevention is the best and often only means of ensuring access to an effective remedy. Children exposed are at risk of life-long impacts, many of which are irreversible, for example the impacts on brain function from lead. The elevated risks of cancer, diabetes, respiratory problems, behavioural disorders, hormonal dysfunctions and other health impacts linked to the hundreds of toxic chemicals children are exposed to cannot be erased. Even if medical treatments are available, the mental suffering that accompanies a child's exposure to toxics cannot be remedied.

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[60] WHO, *World Report on Violence and Health* (2002); and A/HRC/22/53.

[61] Studs Terkel, *The Good War* (1984), p. 542.

[62] International Covenant on Civil and Political Rights, art. 7.

[63] Committee on the Rights of the Child, general comments No. 5 and No. 16; and International Covenant on Civil and Political Rights, art. 2 (3).

[64] Human Rights Committee, general comment No. 31 (2004) on the nature of the general legal obligation imposed on States parties to the Covenant, para. 15; see also Committee on the Rights of the Child, general comment No. 16, para. 31.

[65] See General Assembly resolution 60/147, and Convention on the Rights of the Child, art. 39.

[66] Committee on the Rights of the Child, general comment No. 16, para. 31.

42. The violation of a child's physical integrity from toxics cannot be undone. Causation presents a largely insurmountable obstacle to remedy, with numerous variables and missing information enabling perpetrators to escape accountability. As information is made available, the hazardous substance exposure levels previously considered "safe" continue to fall and increasing numbers of industrial chemicals and pesticides are identified as hazardous — helping to prevent harms in the future, but of far less use to child victims of the past in realizing their right to an effective remedy. Businesses that have left the present generation with contamination are often no longer in existence, financially unable or unwilling to pay for complete remediation.

43. States have a duty to prevent recurrence of human rights violations. The inadequate emphasis on prevention and precaution, in favour of an emphasis on risk management without adequate information on which to calculate the risks, has failed to protect human rights, including children's rights.

F. Right to the highest attainable standard of health

44. States have a duty to protect and realize the right of the child to the "highest attainable standard of health".[67] This includes measures to prevent disease and other health impacts, as well as to ensure access to health care for treatment.

45. States have a duty to ensure the social determinants of health, including safe food, water, and housing, as well as healthy occupational and environmental conditions, for children.[68] Moreover, the rights to food, water and adequate housing are inextricably related to the right to the highest attainable standard of health, and should also be seen in conjunction with the rights to human dignity, life, survival and development, among others.[69]

46. The best interests of the child in attaining his or her right to the highest standard of health require the prevention of exposure to toxic chemicals and pollution.[70] While the magnitude depends on the age of the child, as well as the level and duration of exposure, exposure to toxic chemicals or pollutants reduces the likelihood that a child will attain the highest standard of health. Adverse health effects from childhood exposure to toxics are often irreversible and may not manifest themselves for years or decades, affecting the full realization of the right to health later in life. Health impacts are linked to industrial activities of the present and to the toxic legacy of past decades that persists in food, water, air and soil — a serious challenge to accountability.

47. For certain exposures, the risk of death, injury or illness can be reduced or avoided with timely medical intervention, in parallel with interventions by communities, health-care workers, government officials and other actors. However, for children of the communities most at risk, particularly indigenous, low-income, rural or marginalized communities, access to the necessary health care is often physically or economically unattainable. For example, 53 per cent of countries do not have a poison centre,[71] let alone mechanisms to enable access to costly cancer and diabetes treatments for all.

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[67] Convention on the Rights of the Child, art. 24, and International Covenant on Economic, Social and Cultural Rights, art. 12.

[68] Committee on Economic, Social and Cultural Rights, general comment No. 14 (2000) on the right to the highest attainable standard of health, para. 11.

[69] Ibid., para. 3.

[70] Ibid., paras. 15 and 21-27.

[71] WHO, "The public health impact of chemicals: knowns and unknowns" (2016).

48. States have an obligation under international law to enact and enforce laws to prevent childhood exposure to hazardous substances.[72] The failure to do so constitutes a violation of the right to health.[73]

G. Right to a healthy environment

49. As noted above, the quality of the environment is a determinant of human health. Toxics released into air, wind and water can directly or indirectly lead to childhood exposure, impacting on the child's right to health. In 2010, over 70 per cent of the world's national constitutions included explicit references to environmental rights and/or responsibilities.[74] As regards laws, court decisions and international treaties or declarations, the figure rises to more than 90 per cent.[75] The realization of a healthy environment requires that States take effective measures to prevent childhood exposure to toxics.

H. Right to an adequate standard of living, including food, water and adequate housing

50. Children have a right to an adequate standard of living, including the rights to safe food, clean and safe water, and adequate housing.[76] The rights to food, water and adequate housing are necessary to ensure that children enjoy a standard of living adequate for their health and well-being. The realization of the child's right to an adequate standard of living requires States to prevent exposure to hazardous substances. States are required to ensure that food, water and housing are free from hazardous substances and do not interfere with the enjoyment of health and other human rights.[77]

I. Right to non-discrimination

51. Every child has the right to enjoy human rights and fundamental freedoms. States must respect, protect and fulfil rights for each child in their jurisdiction without discrimination of any kind.

52. States must ensure that all legislation and all policies and programmes are not intentionally or unintentionally discriminatory towards children in their content or implementation.[78] States are required to protect children from discriminatory practices by businesses.[79] States must be accountable for how laws, policies and programmes regarding toxics and pollution, including those on the provision of safe and clean water, food and housing, are non-discriminatory to children, of both the present and future generations.

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[72] Convention on the Rights of the Child, art. 4. See also Committee on Economic, Social and Cultural Rights, general comment No. 14, paras. 15 and 51; and Committee on the Rights of the Child, general comment No. 15, para. 49.

[73] Committee on Economic, Social and Cultural Rights, general comment No. 14, para. 15.

[74] See A/HRC/19/34, para. 30.

[75] David Boyd, *The Right to a Healthy Environment* (2012).

[76] Convention on the Rights of the Child, art. 27; and International Covenant on Economic, Social and Cultural Rights, art. 11.

[77] Committee on Economic, Social and Cultural Rights, general comments No. 4 (1991) on the right to adequate housing, paras. 8 (d) and (f); No. 12 (1999) on the right to adequate food; and No. 14, para. 12; and Committee on the Rights of the Child, general comment No. 15, paras. 48 and 49.

[78] Committee on the Rights of the Child, general comment No. 16, para. 13.

[79] Ibid., para.14.

53. States must also take action to prevent discrimination against and stigmatization of persons who have been exposed to toxics, due to their ill-health, disabilities or other adverse impacts as well as to their opposition to the activities of States and industries.

J. Right to be free from the worst forms of child labour

54. Under the Convention on the Rights of the Child, States have an obligation to protect children from performing any work likely to be hazardous or harmful to their health or development.[80] The ILO Worst Forms of Child Labour Convention, 1999 (No. 182), in article 3, describes work that harms a child's health as one of the worst forms of child labour. This has been further clarified to include "work in an unhealthy environment which may, for example, expose children to hazardous substances, agents or processes... damaging to their health".[81]

55. Legislative, enforcement and other measures must be taken by States to prevent children from handling hazardous substances or working in hazardous conditions.[82] Each State party to ILO Convention No. 182 is required to "take immediate and effective measures" to prohibit and eliminate labour practices harmful to the health or development of child workers.[83] ILO recommendation No. 190 states that criminal penalties should apply for violations.[84]

56. States must also protect and fulfil the right of parents to safe work, especially women and girls of reproductive age.[85] As parents' exposure to toxic chemicals can affect the development of the child, this is inextricably linked to the realization of several rights of the child. Cases of children born with disabilities because their mothers worked with toxic chemicals before or during pregnancy, or harmed by toxic residues brought into the home from work ("take-home exposures") by their parents or others illustrate the importance of protecting not only women and girls of reproductive age, but the population at large.

K. Right to information

57. Children and their caregivers have a right to information about hazardous substances and wastes. The Convention on the Rights of the Child emphasizes the need for information for the promotion of the physical and mental health of the child.[86] The right to information is essential to the child's right to freedom of expression,[87] right to be heard and other rights.

58. Health and safety information about hazardous substances must be available and accessible, in a form that functions to protect the rights of everyone, in particular those most at risk, such as children.[88] As such, children must have access to environmental health information that is "understandable and appropriate to children's age and educational

[80] Convention on the Rights of the Child, art. 32, and International Covenant on Economic, Social and Cultural Rights, art. 10.

[81] ILO recommendation No. 190, para. 3 (d).

[82] Convention on the Rights of the Child, art. 32, and International Covenant on Economic, Social and Cultural Rights, art. 10.

[83] Worst Forms of Child Labour Convention, 1999 (No. 182), art. 1.

[84] See para. 13.

[85] International Covenant on Economic, Social and Cultural Rights, art. 7 (b), and Chemicals Convention, 1990 (No. 170) and conventions and recommendations cited therein.

[86] Convention on the Rights of the Child, art. 17.

[87] Ibid., art. 14 (1).

[88] See A/HRC/30/40.

level".[50] Child-specific disaggregated data must be available to account for differences in exposure among specific groups of children.

59. During sensitive periods of development, children cannot process or use information about the risks of toxics. Moreover, information about health risks and possible sources of exposure is neither available nor accessible to parents and guardians for tens of thousands of substances manufactured and used by industries in food and consumer products, which often end up contaminating air and water.[51]

60. Even if information is available and accessible, parents are often powerless to comprehend, assess and use the information to prevent exposure. Incomplete information, including on prevention and mitigation measures, can exacerbate impacts.[52]

61. States have an obligation to monitor and evaluate the impact of laws, policies and mechanisms in protecting children from toxics. States have a duty to ensure that parents and children have information about children's health and are supported in using it.[53] States should engage in data gathering, collaboration with civil society, and investigations, and should ensure transparency, as well as complaint mechanisms for consumers, communities and other populations at elevated risk.[54] States have an obligation to monitor childhood exposure to toxics, as well as the incidence of cancer, diabetes and other diseases linked to childhood exposure, and other related impacts. Monitoring emissions into the environment and the presence of toxics in products and food has helped States prevent exposure and reduce the risk of adverse health impacts.

IV. Business responsibility to prevent exposure by children to toxics

62. Directly and indirectly, business activities account for most childhood exposures to toxics. Many emblematic cases of human rights violations from business activities share hazardous substances and wastes as a common denominator.

63. Independently of a State's ability and/or willingness to fulfil its own human rights obligations,[55] businesses have a responsibility to respect the rights of the child.[56] The State's duty to prevent childhood exposure to toxics is mirrored by the responsibility of businesses to prevent childhood exposure to hazardous substances and wastes. The responsibility of businesses to respect children's rights exists independently of and does not diminish the obligations of the State.

64. Nearly every businesses sector is directly or indirectly involved in the production, use, release or disposal of hazardous substances. Each of these sectors — extractive industries, energy, chemical manufacturing, construction, food and agriculture, household

[50] Committee on the Rights of the Child, general comment No. 15 (2013), para. 58.

[51] Swedish Chemicals Agency, "Increasing children's protection through REACH" (2014); Danish Environmental Protection Agency, *Exposure of Pregnant Consumers*, p. 7.

[52] It is reported that in Flint, Michigan (United States), mothers boiled water to remove lead, but this only concentrated the presence of lead in the water before it was used in infant formula. See footnote 13 above.

[53] Convention on the Rights of the Child, art. 24 (2) (e), and Committee on the Rights of the Child, general comment No. 15, para. 59.

[54] Committee on the Rights of the Child, general comment No. 16.

[55] Guiding Principles on Business and Human Rights, principle 11.

[56] Ibid. See also the OECD Guidelines for Multinational Enterprises (2011), and Committee on the Rights of the Child, general comment No. 16.

products, cosmetics, furniture, clothing, electronics, recycling, waste disposal, the automotive sector, and others — has a responsibility, as do the financiers and investors and the lawyers who advise these industries, to prevent childhood exposure to toxics. Businesses have a responsibility to prevent children from being exposed to toxics from their activities, both directly and indirectly.

A. A framework for solutions

65. While the impacts are grave and widespread, solutions are possible and the benefits of past efforts are measurable.

66. The health and economic benefits of such a framework are documented. For example, the phaseout of lead in gasoline translated into annual cost savings of $2.4 trillion (4 per cent of global GDP) by preventing childhood exposure to lead and its impacts on cognition.[96] Following the phaseout of lead from gasoline in the 1970s in the United States, the average IQ increased nationally by 2.2-4.7 points.[97] Economically, this is estimated at between $153 billion and $443 billion (at present-day value) in benefits for each birth cohort in the country.[98]

67. Requiring chemical manufacturers to submit health effects data conforming to current scientific standards has led to the withdrawal of hundreds of toxic substances that were allowed for use. The Birth Defect Prevention Act of the State of California (United States) led to over 400 of 703 previously registered pesticides being withdrawn from the market by manufacturers or being suspended by regulators between 1992 and 2010 — simply by requiring information on associated health risks to children.[99]

68. National and international efforts to reduce second-hand exposure to tobacco smoke show recognition of both the vulnerability of children to exposure and their right to physical integrity. Smoking has been increasingly restricted from indoor spaces to protect the rights of the child, among others.

69. Other examples of addressing certain sources of exposure to toxics by young children include the European Union directive on the safety of toys, which prohibits the presence of substances in toys that are classified as carcinogenic, mutagenic or toxic for reproduction,[100] and United States legislation to protect children working on tobacco farms from toxic pesticides.[101] Globally, a new treaty on mercury pollution holds promise, but only addresses one element of a much larger problem. States and businesses still have a long way to go.

70. States are not adequately protecting children from toxics from business activities, as is clearly indicated by rates of exposure, death, disease and disability. Laws and policies must prioritize the protection of children, women and girls of reproductive age, and other

[96] See www.unep.org/newscentre/default.aspx?DocumentID=2656&ArticleID=8917#sthash.q9BV3Pgv.dpuf.

[97] S.D. Grosse and others, "Economic gains resulting from the reduction in children's exposure to lead in the United States", *Environmental Health Perspectives* (2002).

[98] WHO, *Childhood Lead Poisoning* (2010), p. 35 (the original calculation was between $110 billion and $319 billion, at the year 2000 value of the United States dollar).

[99] California Environmental Protection Agency, *A Guide to Pesticide Regulation in California* (2011), p. 22.

[100] Submission from Slovenia.

[101] Submission from Human Rights Watch.

at-risk groups. States parties to the Convention on the Rights of the Child have a duty to take legislative and administrative measures to do so.[100]

71. The global nature of the challenge, including the transnational nature of corporate structures and business relationships, requires strong international cooperation. Severe limitations in the capacities of developing countries also necessitate strong international cooperation, as well as cost-recovery mechanisms by States, particularly in developing countries.

72. In its general comment No. 16, the Committee on the Rights of the Child outlined a useful framework to ensure that businesses respect the right of the child not to be exposed to toxics. This framework consists of effective legislation, regulation and enforcement, as well as policy, remedial, monitoring, coordination, collaboration and awareness-raising measures. The framework also articulates a strong basis for the implementation of extraterritorial obligations.

73. The principles of good governance, namely transparency, responsibility, accountability, participation and responsiveness, are essential to the implementation of such a framework.[101]

74. Under this framework, businesses have a responsibility to undertake child rights due diligence to identify risks and prevent children from being exposed to toxics and pollution through their activities, and to prevent and mitigate exposure through their business relationships.[102]

B. Due diligence by businesses to prevent childhood exposure

75. At its most basic, human rights due diligence for toxic chemicals consists of identifying potential adverse impacts from businesses' activities and business relationships and taking active measures to prevent such impacts from materializing. Failure to conduct a reasonable degree of human rights due diligence for toxic chemicals can subject corporate executives to criminal charges.[103]

76. In the Republic of Korea, potentially over 1,200 people suffered health impacts, including pregnant women and children, of whom at least 95 died because companies had sold a humidifier sterilizer to consumers without evidence that the chemicals would be safe for those who would inevitably inhale the substance.[104]

77. It is unclear whether the chemical manufacturer, SK Chemicals, knew where the chemicals they sold were being used, or even attempted to ask. The consumer product was marketed and labelled as "safe" and "healthy", despite no indication that it had tested as such. It appears that children were among those most affected, and the extent to which others may have been injured or killed is unknown. The company that sold the vast majority of the suspected product was a health-care company, Reckitt Benckiser, which also manufactures pharmaceuticals and has the expertise to assess the risks from toxics to human health.

[100] Convention on the Rights of the Child, art. 3.

[101] See www.ohchr.org/EN/Issues/Development/GoodGovernance/Pages/GoodGovernanceIndex.aspx.

[102] Guiding principles Nos. 13, 15 and 18.

[103] See http://mobile.nytimes.com/2016/07/05/business/dealbook/south-korea-targets-executives-pressed-by-an-angry-public.html.

[104] See A/HRC/33/41/Add.1.

78. Businesses must pay specific attention to the potential for children to be exposed to toxics by their activities, through the products that they manufacture or sell, and due to emissions into the environment and child labour conditions in upstream supply chains.

C. Responsibility to prevent exposure through businesses' activities

79. Businesses should prevent exposure to toxics and to substances with unknown risks as the best measure of respecting human rights, including children's rights. The tragic deaths and injuries due to toxic humidifier sterilizers in the Republic of Korea illustrate this clearly.[107] The profound lack of precaution in the Samarco mining waste disaster in Brazil[108] also illustrates the extent to which businesses are failing to do basic human rights due diligence with respect to hazardous substances and wastes.

80. Businesses have a responsibility, first and foremost, to avoid causing or contributing to impacts on the rights of the child through their activities, and to address such impacts when they occur.[109] The best way to prevent impacts on the rights of the child from hazardous substances is through prevention of exposure.

81. The responsibility to prevent children from being exposed to toxics and pollution will require the modification, cessation or relocation of certain activities that present unmanageable or simply unknown risks to children. However, businesses consistently argue that precaution is not "science-based", in an effort to disregard the science behind the need for precaution when it comes to children and toxics.[110]

82. Businesses often complain about the cost implications of protecting human rights from toxics.[111] However, the protection of profit margins by industries is not a legitimate or justifiable derogation from any human right. Businesses have a responsibility to prevent childhood exposure to toxics and pollution, throughout the supply chain. If a business's activity or relationship continues to expose children to toxics, it should explain why it cannot be avoided and how this respects the rights of children.

83. An emblematic case of child rights violations due to failure to prevent emissions and releases of hazardous substances into the environment is the case of Chisso Corporation in Minamata Bay, Japan.[112] From 1932 to 1968, waste containing mercury flowed from Chisso's chemical factory into Minamata Bay. Thousands of children were poisoned by contaminated fish consumed by themselves or their mothers, suffering tragic impacts on their right to life, development and health. Among many health impacts known collectively as "Minamata Disease", congenital disorders were observed in children born to mothers who did not display any health impacts. Economic considerations were the primary reason why the government did not require the company to stop emitting mercury into the Bay for twelve years after the first cases were first identified in 1956.

84. The Government of Japan acknowledges that: "Even taking historical and social conditions at the time into consideration, the governmental failure to prevent harmful impacts on human health from increasing, due to not taking strict measures against the

[107] A joint letter of allegation was sent to the Government on 12 February 2016 and a response was received on 20 April 2016. See A/HRC/32/53.
[108] A joint letter of allegation was sent to the Government on 24 November 2015. See A/HRC/32/53.
[109] Guiding principle No. 13 (a).
[110] See, for example, United States Chamber of Commerce, "Precautionary principle" (2010).
[111] International Chemical Secretariat, "Cry wolf" (2015).
[112] Ministry of the Environment, Japan, "Lessons from Minamata disease and mercury management in Japan".

responsible companies for a long time, still provides valuable lessons today; it shows how important it is to take countermeasures quickly as well as how preventive countermeasures should be taken even when there is scientific uncertainty over the cause of the problem."[113]

85. Extractive industries are consistently the source of emissions and residual contamination that has an impact on the rights of the child.[114] As the Special Rapporteur highlighted in his previous report, 19 children and 3 adults suddenly lost consciousness and began having seizures in the village of Berezovka, Kazakhstan, about 5 kilometres from one of the world's largest oil and gas condensate fields (Karachaganak).[115] A medical examination of the residents of Berezovka revealed that 80 per cent of the children were suffering from lung diseases.[116]

86. Businesses are also required to remediate contamination. The lack of remediation of contaminated sites is a grave problem for the rights of the child. In the case of Chisso Corporation, remediation of extreme levels of mercury contamination took decades to begin and remained insufficient, according to court settlements, 50 years later.[117] The case of lead pollution in Kabwe, Zambia, shows how difficult this is in countries with few resources to cope with environmental liabilities. Neither the World Bank nor the Government of Zambia have so far been able to find a sustainable solution for the pollution caused by an old lead mine in the city.[118]

87. While some businesses act responsibly and in good faith, others behave with impunity. For example, Occidental Petroleum and Pluspetrol have left thousands of contaminated sites in the Peruvian Amazon from approximately 40 years of oil production, contaminating the food and water of local indigenous communities.[119] Pluspetrol abandoned the sites without remediating contamination, despite a contractual obligation to clean the contamination left by both companies. A new operator, Pacific Stratus Energy, continues to produce oil in the region, despite heavily corroded pipelines that frequently rupture and spill large quantities of oil, adding to the contamination.

88. Businesses must ensure their products do not contain toxic or otherwise hazardous substances. Toys imported to Europe are regularly found to contain high levels of toxics.[120] In 2008, a toxic chemical that can cause renal failure was found in tainted milk powder sold in China. Nearly 40,000 children required urgent medical attention, 12,892 of whom required hospitalization. Four children tragically died in that incident, which followed a similar incident in 2003 that killed 12 children.[121]

89. Businesses that generate waste, or products that become waste, also have a responsibility. The emblematic case is the illegal dumping of toxic waste in Côte d'Ivoire by Trafigura that killed at least 17 people and injured more than 100,000, with the full extent of the contamination in and around Abidjan unknown.[122]

[113] Ibid., p. 6.
[114] Submission from Equidad, Peru.
[115] See A/HRC/30/40/Add.1, para. 58.
[116] Ibid., para. 59.
[117] Jane Hightower, *Diagnosis: Mercury* (2008).
[118] Submission from Terre des hommes.
[119] Submission from Equidad, Peru.
[120] Submission from GRID-Arendal.
[121] Submission from International Service for Human Rights.
[122] See A/HRC/12/26/Add.2.

D. Responsibility through business relationships

90. Businesses also have a responsibility to prevent and mitigate adverse child rights impacts that are linked to their operations, products or services by their business relationships, including upstream suppliers, and after products are sold.[123]

91. First, businesses must seek to "prevent" rights impacts. Only if businesses are unable to prevent, should they mitigate. If a company only mitigates, it should be in a position to explain why it was not able to prevent, and should seek to ensure that it will be able to prevent in the future.

92. The best way for companies to prevent harm is through the prevention of exposure, which is best achieved by avoiding the manufacture, use and emission of hazardous substances wherever possible. Businesses should ensure that the products they sell are used, recycled, reused and disposed of in a safe and environmentally sound manner.

93. The importance of upstream prevention is illustrated by the case of children working in cobalt mines in the Democratic Republic of the Congo. Reports describe children in Indonesia[124] and Peru[125] poisoned by mercury and suffering from birth defects due to small-scale gold mining.Companies that purchase or invest in such commodities have a responsibility to ensure that child rights are not violated as a result of their demand.

94. The responsibility of businesses for products sold is highlighted by the persistent problem of children poisoned by highly hazardous pesticides, particularly in developing countries. Businesses continue to export to or manufacture in developing countries hazardous pesticides whose use is prohibited in various industrialized countries. Such industrialized countries often have more resources to ensure that hazardous pesticides are used in a safe and sound manner, but still have determined that the risks are unmanageable.[126]

95. Children die with startling regularity from pesticide poisonings. A major contributor to this problem is that a large number of hazardous pesticides that present unmanageable risks are not banned or restricted at the global level. Another significant problem is the half a million tons of obsolete pesticides scattered across developing countries, and seeping into soil and water.[127]

96. At the tail end of industrial activity, children are far too often found working at toxic waste dumps, burning plastics and cables to recover and recycle precious metals.[128] Electronic waste (e-waste) is of particular concern. Children, sometimes as young as five, are involved in manual dismantling and burning of electronic products at e-waste sites in Africa, Latin America and Asia. Some are described as being among the most polluted places on earth.[129] Infants living near waste disposal sites, due to their hand-to-mouth behaviour, are among the most vulnerable groups, as soils and dusts are generally

[123] Guiding principle No. 13 (b).

[124] http://pulitzercenter.org/reporting/philippines-child-labor-gold-mines-indonesia.

[125] See A/HRC/18/30/Add.2, para. 39.

[126] See CRC/C/MEX/CO/4-5 and A/HRC/33/41/Add.2.

[127] See www.fao.org/agriculture/crops/obsolete-pesticides/prevention-and-disposal-of-obsolete-pesticides/en. In its submission, Senegal highlighted many concerns regarding banned, restricted and obsolete pesticides.

[128] Kristen Grant and others, "Health consequences of exposure to e-waste: a systematic review", *The Lancet Global Health*, vol. 1, issue 6.

[129] See www.worstpolluted.org/projects_reports/display/107.

contaminated with lead and other toxics.[130] In Latin America, many of these recycling and recovery operations take place in communities, not in clearly defined waste dumps.[131]

97. Children are found with record levels of toxic chemicals in their bodies at such waste sites.[132] Young girls, still developing and approaching the age of reproduction, work as collectors or vendors in highly toxic environments.[133] At La Chureca in Managua, Nicaragua, approximately half of all waste pickers were less than 18 years old.[134] In Guiyu, China, about 80 per cent of children suffer from respiratory diseases, and there has been a surge in cases of leukaemia and concentrations of lead in blood are high.[135]

E. Responsibility to ensure an effective remedy

98. Businesses have a shared responsibility with the State to realize the right of children to an effective remedy for violations resulting from childhood exposure to toxics. Businesses should help ensure, inter alia, non-recurrence, rehabilitation and compensation, as part of an effective remedy.

1. Non-recurrence

99. Preventing the recurrence of human rights violations is a critical element of an effective remedy, and is closely linked to the right to information. The toxic legacy of our past cannot be erased in its entirety, but collectively, we can avoid making the same mistakes in the future. States should ensure that businesses systematically transition from the manufacture, use and emission of hazardous substances to safer alternatives, including alternative materials and mitigation technologies to eliminate the intrinsic or unknown hazards wherever possible.

100. States must ensure that businesses prove that their chemicals are safe, not just for the average adult, but for children who may be exposed and where substances are being used. Otherwise, there is a risk of recurrence of human rights impacts, as has repeatedly been illustrated.

101. States should ensure businesses prevent emissions into the environment to the maximum extent possible as part of their human rights obligations, avoiding further introductions of toxic chemicals and additional contaminated sites requiring remediation to prevent impacts.

2. Rehabilitation

102. A core component of an effective remedy for toxic chemical contamination is rehabilitation, both of the environment and of the people affected. Around the world, contaminated sites continue to plague children in the nearby communities. While some States are making strides in remediating contaminated sites, hundreds of thousands of contaminated sites from businesses remain. States must ensure that businesses clean up contaminated sites to protect children in the future.

[130] ILO, *The Global Impact of E-Waste*, p. 22.
[131] United Nations University and GSMA, "E-waste in Latin America" (2015).
[132] ILO, *The Global Impact*.
[133] Ibid., p. 20.
[134] Ibid., p. 21.
[135] Ibid., p. 22.

103. Relatedly, adults and children who are physically or mentally disabled due to childhood exposure to toxics should have access to health care.[136] Such care must enable those impaired to enjoy a full and decent life, in conditions which ensure dignity, promote self-reliance and facilitate their active participation in the community.[137]

3. Compensation

104. Compensation for victims is a necessary component of an effective remedy. However, compensation alone is insufficient, given the persistence of toxics in the environment and the irreversible and lifelong consequences of many types of exposure. Prevention must also be a priority, according to human rights obligations.

105. While the risk to businesses of paying victims large compensation awards can help incentivize companies to phase out toxics in products or to reduce pollution, because of substantial differences in the strength of product liability laws across jurisdictions, the threat of compensation is not sufficient. Asbestos is a common example, with countries unable to ban an unquestionably hazardous substance that kills over 100,000 people per year, despite billions of dollars in compensation being paid to victims over decades.[138]

106. Although large sums of compensation are paid following lawsuits involving hazardous substances and wastes, the vast majority of child victims of air pollution, food and water contamination, toxic chemicals and pesticides are not compensated. Even in cases where rights are clearly infringed and the relevant businesses or other actors identified, realizing an effective remedy and ensuring corporate accountability for harms due to toxic chemicals or pollution has proven extremely difficult around the world. The reasons for this difficulty include lack of awareness among victims that their diseases could have been caused by childhood exposure to toxic chemicals or pollution; the burden of proof placed on children, including the need to establish causation; fundamental information that has not been generated or is confidential about the hazards and uses of substances; the challenge of identifying perpetrators; weak or non-existent legislation; the costs of legal representation for plaintiffs; endless appeals processes; confidential out-of-court settlements; and the use of subsidiaries or contractual relationships to shield corporate liability.

V. Future work

107. The Special Rapporteur plans to continue working on the obligation of States to prevent childhood exposure. He plans to carry out further investigations into the nature and scope of the obligation of States and responsibilities of businesses to prevent exposures, and into permissible restrictions in that regard, and to provide a guide to good practices.

VI. Conclusions and recommendations

108. **States have recognized their duty to protect and realize children's rights, from which derives an obligation to protect children from exposure to toxics. These rights include the right to life and childhood development, the right to health, the right to physical integrity, the right to be free from the worst forms of child labour, the rights to food, water and adequate housing, and others.**

[136] Convention on the Rights of the Child, art. 23.
[137] Ibid.
[138] UNEP, *Global Chemicals Outlook*.

109. The Special Rapporteur offers the following recommendations to the various stakeholders to protect the rights of the child from toxic chemicals.

110. States should:

(a) Prevent childhood exposure to pollution and toxic chemicals as part of States' obligation to protect children, and guarantee an effective remedy for exposure and environmental contamination. States must ensure that this is reflected in laws and policies. States must also ensure the same protection to women and girls of reproductive age;

(b) Consider the best interests of the child as a priority when designing, implementing and monitoring public health, environmental, consumer and labour laws and policies. States must take into account the fact that specific groups of children are more likely to be exposed, and are thus at greater risk;

(c) Ensure the availability of and access to adequate and age-appropriate information on children's rights and toxics. States should promote education on toxic chemicals and pollution in primary schools' curricula;

(d) Strengthen childhood exposure-monitoring efforts in all countries, particularly for those in developing countries and high-risk situations, such as those living in extreme poverty or in low-income, minority, indigenous, stateless, migrant or refugee communities. States should also undertake longitudinal cohort studies that are harmonized, and other studies of pregnant women, infants, and children that capture exposures at critical windows and sensitive health endpoints along human development;

(e) Explicitly set out government expectations for business enterprises to not expose children to toxics in the context of their business activities and domestic and international business relationships, in line with the Guiding Principles on Business and Human Rights, within its guidance to the private sector on children's rights;

(f) Eliminate work by children where they are exposed to toxics and ensure safer alternative employment, and monitoring of children affected. States should ensure that children affected receive the necessary treatment and compensation. States should also ensure that women and girls of reproductive age are guaranteed protection from occupational exposure to toxics and the substitution of toxics with safer alternatives as the primary means of prevention;

(g) Conduct a national assessment of children's environmental health and identify priority concerns, including children in vulnerable situations, and develop and implement action plans to address those priority concerns;

(h) Ensure that children have access to justice and an effective remedy for violations due to toxics, including remediation of contaminated sites, preventative and precautionary measures, access to necessary medical and psychological care, and adequate compensation;

(i) Establish population-based surveillance systems for adverse health impacts linked to toxics and pollution;

(j) Strengthen regulatory agencies and ministries responsible for the oversight of standards relevant to children's rights implicated by toxics and pollution, such as health, consumer protection, education, environment, food, and labour. States should ensure that they have sufficient powers and resources to monitor and to investigate complaints and to provide and enforce remedies for abuses of children's rights. States should increase and strengthen intersectoral cooperation;

(k) **Work with relevant national and international organizations on monitoring and identification systems for hazardous remnants of armed conflict. Governments must provide an effective remedy for hazardous remnants of conflict and other military activities, including funding for full remediation, comprehensive medical treatment and compensation for individuals experiencing the effects of exposure to these materials;**

(l) **Require businesses to undertake child rights due diligence to ensure businesses meet their obligation to adopt measures to respect children's rights;**

(m) **Include the issue of toxics and pollution within all national action plans on business and human rights, and within the national policy framework for implementation of the Convention on the Rights of the Child;**

(n) **Take up these recommendations in their review of their peers during the universal periodic review.**

111. **Businesses should:**

(a) **As part of their human rights due diligence, identify, prevent and mitigate exposure of children to toxics through their activities, products or business relationships, including global supply chains and other international relationships;**

(b) **Generate and disclose information related to the risks of exposure and on the intrinsic hazards of industrial substances, pesticides and food additives that they manufacture and sell;**

(c) **Communicate publicly and objectively measures taken to mitigate potential childhood exposures;**

(d) **Where safer alternatives exist, use those alternatives to mitigate human rights impacts. Where alternatives do not exist, businesses should actively invest in the development and adoption of safer alternatives and mitigation measures;**

(e) **Ensure that health and safety information about the potential hazards to children of industrial chemicals and pesticides is generated and is made available and accessible to regulators and businesses down the supply or value chain;**

112. **International organizations should:**

(a) **Integrate the problem of toxic chemicals, pollution and waste into the work of their organization, based on their respective competencies, and monitor and report on the issue;**

(b) **Increase efforts to reduce the exposure of children and women of reproductive age to toxic chemicals, particularly of child workers and those living in high-risk situations.**

113. **The Committee on the Rights of the Child should:**

(a) **Increase its attention to the children's rights impacts of pollution and toxics when reviewing States' obligations under the Convention;**

(b) **Consider undertaking a study on the impacts of toxics and pollution on the rights of the child, recognizing the State's obligation to prevent exposure to such hazardous substances and wastes, and building on its general comment No. 16.**

114. **Civil society should:**

(a) **Increase collaboration to strengthen recognition of the children's rights dimension of toxic chemicals and pollution within the human rights, public health, consumer, environmental and labour communities;**

(b) **Submit information to the Committee on the Rights of the Child and other international human rights mechanisms regarding the human rights impacts of toxics and pollution on children's rights;**

(c) **Raise public awareness about the right not to be exposed to hazardous substances and for both adults and children to be free from contamination and pollution.**

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Agenda item 3
Promotion and protection of all human rights, civil, political, economic, social and cultural rights, including the right to development

Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes on its mission to the Republic of Korea

Note by the Secretariat

In the present report, submitted pursuant to Human Rights Council resolution 27/23, the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes shares his findings and makes recommendations on the basis of his visit to the Republic of Korea. He introduces views in relation to recent changes to several national laws, which are aimed at better addressing human rights impacts related to exposure to and mismanagement of hazardous substances and wastes. He also presents his observations on situations in which these laws are applied to those in vulnerable situations.

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Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes on its mission to the Republic of Korea*

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* Circulated in the language of submission only.

I. Introduction

1. The Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes conducted an official visit to the Republic of Korea from 12 to 23 October 2015. The purpose of the visit was to monitor and assess steps taken by that country to protect human rights implicated by the management of hazardous substances and wastes throughout their life cycle.

2. The Special Rapporteur wishes to thank the Government of the Republic of Korea for its invitation and the effort made to facilitate meetings with government authorities. During the visit, the Special Rapporteur met with representatives from several government agencies, the National Human Rights Commission, and the private sector. The Special Rapporteur also had a wide range of consultations with members of civil society organizations and communities in Gimpo, Danyang, Wolseong and Boryeong.

3. The Republic of Korea has experienced rapid industrialization and economic growth since the 1960s, resulting in a dramatic transformation of the country. The manufacturing industry, including both producers and downstream users of industrial chemicals, played a key role in economic development. From 1962 to 2008, the gross domestic product (GDP) of the country increased from $2.3 billion to $928.7 billion. The Republic of Korea ranks fifth in the global chemical industry, with its sales reaching €132 billion in 2013.[1]

4. Rapid increases in chemical production and use demand commensurately robust systems for chemicals management. However, during this period several cases of deadly chemical accidents, occupational diseases and consumer exposure occurred.

5. Following such incidents, legislation and policies for chemicals management were revised and reinforced. Section II and III of the present report introduce certain laws, policies, and relevant government institutions.[2] Section IV addresses specific cases in which the Special Rapporteur observed human rights impacts as a result of mismanagement of and exposure to hazardous substances and wastes.

II. Recent changes to the legal framework for hazardous substances and wastes

6. The Republic of Korea has ratified numerous international human rights treaties and has the obligation to protect, respect and fulfil human rights in accordance with those treaties.[3] Furthermore, the country is a party to several international treaties related to chemicals management, the environment and labour issues. Pursuant to article 6 of the Constitution of the Republic of Korea, all international treaties have the same effect as domestic law. In addition, the Constitution stipulates several specific human rights implicated by hazardous substances: the right of citizens to "human dignity" and "to pursue happiness" (art. 10); the principle of non-discrimination (art. 11); the right to information as implied in the freedom of expression (art. 21); and the right to a healthy and pleasant environment (art. 35).

[1] The European Chemical Industry Council, Facts and Figures 2014.

[2] Due to strict word limitations, the present report can neither discuss all of the laws and policies in the Republic of Korea for the management of chemicals, nor cover those which are discussed in detail.

[3] Ratification status is available from http://tbinternet.ohchr.org/_layouts/TreatyBodyExternal/Treaty.aspx?CountryID=141&Lang=EN.

7. To better protect public health and the environment, the Republic of Korea has recently enacted or amended certain national laws, some of which are briefly discussed below.[4] The Special Rapporteur wishes to highlight some of the laws that are aimed at addressing challenges experienced by the Republic of Korea during the aforementioned period. The specific applications of some of these laws are introduced in Section IV of the report.

A. Prevention

Act on the Registration and Evaluation of Chemical Substances

8. The Act on the Registration and Evaluation of Chemical Substances is aimed at protecting public health and the environment by utilizing available information about industrial chemicals.[5] The Act ensures that hazardous substances are registered and assessed for their risks.

9. The Special Rapporteur welcomes several aspects of the Act. For instance, it requires chemical manufacturers to submit available information about the formula, usage, properties, hazards and risks of chemical substances during registration (art. 14). It also stipulates that, if necessary for protection of human health and the environment, information about hazardous chemical substances cannot be considered as confidential business information and is not subject to protection under the Unfair Competition Prevention and Trade Secret Protection Act.[6] Furthermore, it is possible that the Act on the Registration and Evaluation of Chemical Substances will generate and make available health hazard information that would otherwise be unknown for chemicals produced at lower volumes, going beyond comparable legislation in the European Union.

10. Nonetheless, the Special Rapporteur wishes to highlight a few concerns. Depending on the manner in which the Act and analogous legislation is implemented around the world, existing information gaps on the health hazards of tens of thousands of industrial chemicals in commerce may not be closed. According to the Government, it is when a substance is deemed to have potential risks that a manufacturer is required to generate and register hazard and exposure information for the substance.[7] Without sufficient information on health hazards or usage, it is not clear how the Government will determine which out of tens of thousands of industrial chemicals have potential risks. The Act does not adequately address the very problem that inspired the legislation: the risk that consumers will be exposed to substances without adequate information regarding their health hazards (see section on protecting consumers below). However, the Government explained that all non-phase-in substances are required to be registered regardless of the quantity or their hazardous properties, and that it has a plan to require all chemical manufacturers to generate such information in the long run. In addition, there is considerable reliance within the Act on the full implementation of analogous legislation in Europe, which may present a problem if such legislation is not implemented as envisioned.

[4] Due to the word limit, several laws, including the act on the management of persistent organic pollutants, which implements the Stockholm Convention on Persistent Organic Pollutants, ratified by the Republic of Korea in 2007, are not introduced.

[5] Legislation No. 11789 (entered into force on 1 January 2015).

[6] Article 30 of the Enforcement Decree.

[7] Government submission of 15 July 2016.

Chemical Control Act

11. The Chemical Control Act purports to "protect public health and the environment by systematically managing chemical substances and preventing chemical accidents" (art. 1).[9] The Act amends the Toxic Chemical Control Act in response to the 2012 hydrofluoric acid leak in Gumi (see para. 76 below). While the latter Act required accidents to be reported only when human health or environmental risks existed, the Chemical Control Act requires entities handling substances to formulate a risk management plan that includes chemical leakage scenarios, emergency action plans and damage restoration (arts. 4-6). The changes made by the Chemical Control Act include the addition of "off-site" impact assessments and risk control plans to prevent "chemical accident leakage" from facilities handling hazardous substances and wastes.

Environmental Health Act

12. The Environmental Health Act is aimed at preventing impacts on human health from environmental factors, and reducing related impacts and damage by designating certain health impacts as environmental disease (arts. 1 and 9).[10] The preferential protection of children and other groups of individuals that are at greater risk of harm from exposure to hazardous factors is highlighted (art. 4).

B. Waste management

Resource Circulation of Electrical and Electronic Equipment Act

13. The Resource Circulation of Electrical and Electronic Equipment Act regulates recycling systems for the resources used in electrical and electronic equipment, and vehicles (art. 1).[11] It requires the Government to establish policies on the recycling of resources and to develop technologies for inhibiting the use of hazardous substances in electrical and electronic equipment or vehicles (art. 4). Manufacturers and importers of electrical and electronic equipment should minimize the use of hazardous substances in the manufacturing or import of equipment (art. 5).

Act on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal

14. The Act on the Control of Transboundary Movement of Hazardous Wastes and Their Disposal is aimed at preventing environmental pollution caused by the transboundary movement of wastes,[12] and at improving international cooperation by controlling the export, import and inland transit of wastes in line with the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, which was ratified by the Republic of Korea in 1994. The Government amended the Enforcement Decree in July 2001, providing the legal basis for implementing the Basel Convention Ban Amendment (Decision III/1). The Ban Amendment is designed to address challenges faced by developing countries and countries with economies in transition in controlling imports of hazardous and other wastes that they are unable to manage in an environmentally sound manner but continue to receive.[13] However, the article provides that it will only be enforced

[9] Legislation No. 12490 (entered into force on 1 January 2015).
[10] Legislation No. 11619 (entered into force on 2 July 2013).
[11] Legislation No. 18946 (entered into force on 22 March 2009).
[12] Legislation No. 10911 (entered into force on 26 October 2011).
[13] See www.basel.int/Implementation/LegalMatters/BanAmendment/Overview/tabid/1484/Default.aspx.

when the Ban Amendment comes into force, which it has not. The Republic of Korea has not ratified the amendment.

C. Remedy

Liability, Compensation and Relief from Damages Caused by Environmental Pollution Act (Liability Act)

15. The Special Rapporteur welcomes the Liability Act,[13] which entered into force on 1 January 2016, after his visit. The objective of the Act is to help affected individuals obtain an effective remedy for harm due to air, water, soil, noise and marine pollution. Prior to enactment, victims were often unable to prove liability due to missing information about pollution; the lack of a legal framework to regulate such liability; and the absence of a compensation process for damages incurred. The Liability Act addresses these challenges for certain individuals who have been affected by environmental pollution by presuming causation and reversing the burden of proof (art. 9), namely, in case involving a high probability that a facility may have caused environmental pollution. This is a step towards the Government's implementation of its obligation to provide for effective remedies for those whose rights are affected by environmental harm, as stipulated in international human rights treaties and other international agreements.[14]

Environmental Dispute Adjustment Act

16. In addition to litigation through the judicial system, under the Environmental Dispute Adjustment Act[15] victims of environmental pollution can access the National Environmental Dispute Resolution Commission, established in 1991 under the Ministry of Environment. That is a quasi-judicial body that resolves disputes regarding health, property, and psychological damage caused by environmental pollution through mediation or arbitration.

III. Institutional framework for chemicals management

17. In addition to legislative measures, the Government is obliged to adopt administrative, educative, social and other measures to realize the rights recognized in the International Covenant on Economic and Social Rights (art. 2 (1)) and the International Covenant on Civil and Political Rights (art. 2 (2)).

18. The Special Rapporteur welcomes several measures taken by the Government to better protect human rights, in particular the rights to life and health, from hazardous substances. The Government launched "comprehensive plans for safety management of chemical substances" in July 2013.[16] As a result, in 2014, an institution responsible for the prevention of and responses to chemical accidents, the National Institute of Chemical Safety,[17] was established. In January 2015, a division exclusively dedicated to chemical

[13] Legislation No. 12949.

[14] Universal Declaration of Human Rights, art. 8; International Covenant on Economic, Social and Cultural Rights, art. 2; and Principle 10 of the Rio Declaration on Environment and Development. See also A/HRC/25/53, paras. 41-43.

[15] Legislation No. 8955 (entered into force on 22 September 2008).

[16] Response received from the Ministry of Environment (24 December 2015). See also ECOREA, *Environmental Review 2015, Korea*, vol. 3, chap. 6, pp. 13-19.

[17] More information available from http://nics.me.go.kr.

management, the Chemical Safety Division, was established within the Ministry of Environment.

19. The Ministry of Environment operates the National Chemicals Information System, from which users can find lists of chemicals distributed, the hazards and risks of diverse substances, the current state of management at home and abroad and volumes of distribution and release.[18] A pollutant release and transfer register collects and makes available the volume of chemical pollutants that are released into the environment in the course of their manufacture, utilization or recycling from 39 industries.[19]

20. Since 2005, the Ministry of Environment has been conducting the Korean National Environmental Health Survey to investigate levels of exposure to hazardous substances to help inform environmental health policies.[20] For instance, the Maternal and Infant Health Impact Survey, implemented since 2006, traces and monitors the exposure levels of pregnant women and infants to heavy metals, endocrine disruptors, volatile organic compounds and other substances likely to have adverse health impacts.

21. According to information shared with the Special Rapporteur, health impact surveys have also been carried out among those in vulnerable situations in the surroundings of abandoned mines and at certain industrial complexes.

22. Regarding waste management, in 2002 the Ministry of Environment implemented an online waste disposal verification system called Allbaro.[21] The system tracks waste disposal in real time, thereby reducing the chance that wastes will be abandoned or illegally treated.[22] The Ministry of Environment undertook a project to establish a similar electronic transfer system for the integrated management of hazardous wastes in Viet Nam from 2010 to 2014.

23. The Ministry of Environment is also implementing measures to manage and control specific hazardous substances.[23] For instance, certain mercury reduction measures have been implemented since 2006, including an agenda to prevent impacts from mercury on the marginalized or those in vulnerable situations.[24] In addition, the Ministry of Environment is implementing certain asbestos control policies, as well as measures to provide an effective remedy to victims, as discussed above.[25]

24. Several other ministries are involved in the management of hazardous substances, such as the Ministry of Employment and Labour; the Ministry of Trade, Industry and Energy; the Ministry of Food and Drug Safety; the Ministry of Public Safety and Security; the Nuclear Safety and Security Commission; and the Ministry of Agriculture, Food and Rural Affairs.

[18] Ibid.

[19] Available from http://ncis.niet.go.kr/triopen.

[20] ECOREA, *Environmental Review 2015*, vol. 3, chap. 6, pp. 2-3.

[21] Available from www.allbaro.or.kr.

[22] See, generally, "Allbaro online waste disposal verification system", *Korea Environmental Policy Bulletin*, issue 1, vol. VI (2008).

[23] See, generally, ECOREA, *Environmental Review 2015*, vol. 3, chap. 6, pp. 18-24.

[24] Mercury control plan (2006-2010) and second and third comprehensive plans on mercury control (2011-2015 and 2016-2020).

[25] The Asbestos Safety Management Act (2012) requires management of asbestos throughout its life cycle.

IV. Issues in focus

25. Despite the laws and policies implemented by the Government, the Special Rapporteur observed several areas in which Government responses and measures warrant further action.

26. The Special Rapporteur underlines the State's obligation to protect and realize the rights to life and to enjoy the highest attainable standard of health. In cases involving childhood exposure, the Special Rapporteur reiterates the State's obligation to combat disease by taking into consideration the dangers and risks of environmental pollution.[26]

27. Businesses have the responsibility to respect human rights.[27] Business enterprises are expected to carry out human rights due diligence in order to identify, prevent, mitigate and account for how they address their impacts on human rights.

A. Protecting consumers from hazardous substances in products

28. Consumers in the Republic of Korea, not unlike other consumers around the world, are exposed to hundreds of substances with known and unknown hazardous properties through consumer goods.

29. Repeatedly, toxic substances have been banned by Governments or voluntarily withdrawn by businesses from use in consumer products only after evidence of risk or harm. The United Nations acknowledged in 2009 that the presence of toxic chemicals in products was a global problem.[28]

30. During his visit, the Special Rapporteur was deeply disturbed by the case of "humidifier sterilizers" marketed and sold to consumers in the Republic of Korea without adequate investigation of their risks to human health and life.[29] As of December 2015, the Government had recognized that 95 people had died and 221 had suffered adverse health impacts after inhaling hazardous chemicals which were added to humidifier water tanks and then dispersed through the humidifier inside a home environment. The chemical mixture was marketed on the premise that it would promote health and well-being. The actual number of victims is unknown and is still being evaluated, as described below. The Special Rapporteur is concerned that there may be additional victims that have not yet been identified.

31. Oxy Co. Ltd, which is based in the Republic of Korea, has manufactured and sold its signature humidifier sterilizer product ("Oxy Sak Sak") in that country since 1998. In 2001, Reckitt Benckiser, based in the United Kingdom of Great Britain and Northern Ireland, acquired the company and continued to sell the Oxy Sak Sak, which contained PHMG, one of the hazardous substances responsible for the health damages. Oxy Sak Sak accounted for 60-80 per cent of the market.[30] Fourteen different types of humidifier sterilizers were

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[26] Convention on the Rights of the Child, art. 24 (2) (c).

[27] A/HRC/17/31.

[28] "Chemicals in products" has been a priority area under the Strategic Approach to International Chemicals Management since 2009.

[29] A joint letter of allegation regarding the situation was sent to the Government on 12 February 2016 and a response was received on 20 April 2016. Both can be found in document A/HRC/32/53.

[30] On 12 February 2016, a joint letter of allegation was sent to these companies (see A/HRC/32/53, case Nos. OTH 2/2016, OTH 3/2016, OTH 4/2016, OTH 5/2016, OTH 6/2016, OTH 7/2016, OTH 8/2016, OTH 9/2016 and OTH 10/2016) and to the Government of the States in which the companies are incorporated. Responses were received from Costco Wholesale on 20 March 2016 and Health Hygiene Home RB on 12 April 2016 and 3 May 2016.

manufactured and sold from the 1990s until a mandatory recall in 2011. Other companies implicated include E-mart Co. Ltd., GS Retail Co. Ltd., Lotte Mart Co. Ltd., Home Plus Co. Ltd., ButterflyEffect Inc., Costco Wholesale Korea, Havit Chemical Co. Ltd., SK Chemicals, and Aekyung Co. Ltd.

32. From 2006 to 2011, several individuals were admitted to hospitals for respiratory failure, acute pneumonia and other respiratory diseases of unknown origin. The Korea Centers for Disease Control and Prevention started an investigation in April 2011 and linked the first set of cases of unknown respiratory diseases to the humidifier sterilizers in August 2011. After an epidemiological study and animal tests, the causal relationship between two hazardous substances (PHMG and PGH) in the humidifier sterilizers and respiratory diseases was announced in November 2011 and finally confirmed in February 2012.

33. As of December 2015, following two investigations by the Government, 530 possible victims had been identified, with a total of 221 individuals acknowledged to be victims, including 95 who had died. The Government was continuing to investigate with regard to another 752 alleged victims. Civil society groups claim there are at least 1,848 victims, of which 266 have died. Many of the victims identified, including the deceased, were older persons, pregnant women, new mothers or very young children exposed during the sensitive prenatal and/or postnatal periods. On 28 April 2016, the Minister of Environment stated that he would broaden the criteria for victim recognition.

34. In May 2016, Oxy Reckitt Benckiser and Reckitt Benckiser "accepted full responsibility for the role that this product played in these health issues, including deaths". In stating their "continuing intention to do whatever we can to provide full resolution to these cases", Reckitt Benckiser and Oxy Reckitt Benckiser announced their intention "to establish a compensation fund for those directly impacted, to be administered by independent experts, and a humanitarian fund for all others who believe they have been affected by the humidifier sterilizer issue".[11]

35. While the Government reviewed the safety of the two hazardous substances when they were used in carpets and rubbers, no additional review was required by law before their use as components of humidifier sterilizers. The Government explained that at that time there was no legal obligation of additional hazard review when the use of a substance changed. Reckitt Benckiser, a manufacturer of pharmaceutical, health-care and pesticide products, with considerable expertise on the interaction of chemicals and human health, explained that it had examined whether relevant substances were categorized as chemicals of concern, but did not investigate whether health and safety information was actually available about the hazards of the substance. SK Chemical, a manufacturer of chemicals used by Reckitt Benckiser, would not comment about whether it knew the chemicals were being used in humidifiers without adequate information about their potential health risks. The companies did not test potential health impacts, despite the fact that inhalation and dermal exposure could be reasonably foreseen for the chemical added and dispersed indoors through a humidifier.

36. Reckitt Benckiser and other companies appear to have been in compliance with relevant legislation of the Republic of Korea concerning hazardous substances at the time and claim that they withdrew the product from sale three months before the Government issued a mandatory recall. In response, the Republic of Korea adopted the Act on the Registration and Evaluation of Chemical Substances, which requires the registration of a hazardous substance to be amended when its uses, hazards or risks change (art. 12). The

[11] www.rb.com/media/news/2016/may/oxy-rb-and-humidifier-sterilizers-in-korea.

Special Rapporteur notes that several administrative measures were taken by the Government once the sterilizer was linked with health impacts in 2011, including the mandatory (yet belated) recall of humidifier sterilizers, steps to identify victims, and reclassification of the sterilizers as a sanitary aid, which would subject them to additional safety tests. Companies were fined by the Government for falsely advertising the humidifier sterilizers as "safe to humans".[12]

37. Various criminal and civil suits are pending. Regarding criminal charges, one former chief executive officer of Oxy Reckitt Benckiser was prosecuted, and other former chief executive officers are under investigation.

38. A civil lawsuit was filed against the Government for compensation, in which it was argued that the Government was liable for their injury caused by omission of civil servants. The Seoul Central District Court found that the Government did not breach its duty of care due to the what the Court believed to be constantly changing standards and studies related to hazardous substances and, hence, held that the standard of technology and social awareness at the time should be the standard applied to assess whether the Government's response and measures were sufficient.[13]

39. In the view of the Special Rapporteur, Reckitt Benckiser and other companies that sold humidifier sterilizers/disinfectants failed to conduct a reasonable degree of human rights due diligence about the safety of the chemicals in humidifier disinfectants it sold to consumers. For any company, particularly a pharmaceutical company well versed in the complex interactions of chemicals with the human body, to only resort to examining whether relevant substances are on lists of chemicals of concern is completely insufficient and unreasonable. Reckitt Benckiser would not have resorted to this method of identifying risks for one of its pharmaceutical products, yet it did so for a consumer product that obviously would be inhaled by people, including young children and pregnant women, through normal use.

40. Likewise, based on information available to the Special Rapporteur, it appears that SK Chemical and other chemical manufacturers also failed to conduct due diligence on potential human rights impacts and have not been held accountable for this failure. For example, information has not been made available to the Special Rapporteur that they conducted risk assessments concerning the risk of inhalation by pregnant women and newborn children, took steps to understand where the chemicals they manufactured and sold were being used, or alerted downstream businesses of both known and unknown risks.

41. In the Special Rapporteur's view, the failure of these and other companies implicated to respect human rights was a consequence of legislative gaps that resulted in a failure to realize the right to information on hazardous substances. As noted in his previous report to the Human Rights Council, information on potential impacts must be available and accessible in order for States to fulfil their duty to protect human rights, including the rights to life and health. While the Special Rapporteur views the implementation of the Act on the Registration and Evaluation of Chemical Substances as a positive development, he is concerned that the root cause of the problem has not been completely addressed, i.e. that hazard information was not generated by the chemical manufacturer to ascertain whether the chemicals were safe for their intended use.

42. The Special Rapporteur notes the obligation of the Republic of Korea to realize the right of victims of hazardous substances to an effective remedy.[14] Part of an effective

[12] See A/HRC/32/53, case No. KOR 1/2016.
[13] Seoul Central District Court (2012gahap4515), 29 January 2015.
[14] International Covenant on Civil and Political Rights, art. 2 (3).

remedy is taking measures to prevent recurrence. Regrettably, the Special Rapporteur does not believe adequate measures have been taken by the Government or relevant businesses to prevent future recurrence.

43. The Special Rapporteur was concerned by the delayed investigation by the Government into three pending criminal charges regarding deaths due to toxic humidifier disinfectants. He notes with appreciation the recent efforts of the prosecutors to investigate the case and encourages a complete and through investigation.

44. Furthermore, the Special Rapporteur is concerned that not all victims may have access to an effective remedy, that all victims may not yet have been identified, and that adverse impacts as recognized among identified victims may not represent the entire range of suffering. Certain health impacts can have a long latency period and there may also be side effects of the medical treatments administered.

45. The Special Rapporteur is troubled by the Seoul District Court's decision that the Government exercised its duty of care. This domestic decision, pending appeal, diminishes the State's obligation to respect, protect and fulfil human rights, in particular, the duty to take measures to protect the rights to life and health. The judicial enforcement of human rights is fundamental, specifically the obligation of the Government to protect all persons from acts of private parties that impair the full enjoyment of human rights.

B. Workers

46. During the mission, the Special Rapporteur examined the rights of workers who may develop diseases or other injuries on account of their exposure to hazardous substances.

47. Workers in the Republic of Korea have the right to a healthy workplace. The right to health, stipulated in article 12 of the International Covenant on Economic, Social and Cultural Rights, extends to "underlying determinants of health", including healthy occupational and environmental conditions.[15] Additionally, preventing occupational accidents and disease is a fundamental aspect of the right to just and favourable conditions of work and closely related to the right to the highest attainable level of physical and mental health (art. 12 (2) (b) and (c) of the Covenant). Governments are obligated to adopt measures against occupational health hazards; to formulate, implement and periodically review a coherent national policy to minimize the risk of occupational accidents and disease; and to provide a coherent national policy on occupational safety and health services.[16] Furthermore, the Republic of Korea ratified the ILO Occupational Safety and Health Convention, 1981 (No. 155) in 2008.

48. Workers also have the right to an effective remedy for violations of their right to a healthy workplace. The Korean Workers' Compensation Insurance provides compensation for workers who are injured in the course of employment, as required under the Labour Standards Act.[17] This governmental insurance programme is operated by the Korea Workers' Compensation and Welfare Service, established by the Industrial Accident Compensation Insurance Act.[18] The industrial accident compensation insurance is part of efforts by the Republic of Korea to realize the right to social security, including social insurance, pursuant to its obligation under article 9 of the International Covenant on

[15] Committee on Economic, Social and Cultural Rights general comment No. 14 (2000) on the right to the highest attainable standard of health, para. 11.

[16] Ibid., para. 36.

[17] Act No. 9038 (entered into force on 28 March 2008).

[18] Act No. 4825 (entered into force on 22 December 1994).

Economic, Social and Cultural Rights and other treaties.[39] This right encompasses the right to access and maintain benefits as a result of lack of work-related income caused by sickness, disability or employment injury, among other things.[40]

49. According to the Industrial Accident Compensation Insurance Act, work-related diseases are defined as those which occur in the handling of, or exposure to, elements, including chemical substances, that could harm a worker's health in the course of employment (art. 37). In the event of work-related injury, disease, disability or death, the Government pays industrial accident compensation insurance benefits in accordance with the Act. A claim for industrial accident compensation is determined by a three-step process of industrial accident investigations by the Korea Workers' Compensation and Welfare Service, epidemiological surveys by the Korea Occupational Safety and Health Research Institute, and deliberation by the Committee on Occupational Disease Judgement.

50. Workers (and their unborn or newborn children) in various sectors are at an elevated risk of adverse health impacts from chronic exposure to toxic chemicals that may not manifest as a disease for several years, as well as accidents involving hazardous substances such as leaks, spills and explosions.

I. Worker exposure: electronics manufacturing

51. There is a long history of illness among workers in the electronics sector as a result of exposure to toxic chemicals.[41] For example, a study of nearly 32,000 workers at IBM between 1969 and 2001 showed that "male manufacturing workers were around 60-80 per cent more likely to have died from cancers of the kidney, skin, brain and central nervous system".[42] Given the prominent role of electronics in the Republic of Korea in recent decades, the Special Rapporteur paid close attention to how the Government and businesses were protecting and respecting the human rights of workers in the electronics sector to a safe and healthy workplace.

52. In the electronics industry, chemical substances are used in the manufacture of devices, including in displays, semiconductor chips, casings and batteries and other component materials. There is a significant likelihood that workers may be exposed to hazardous substances, which can lead to serious health impacts such as cancer, infertility, birth defects, respiratory illness and disruption of hormone (endocrine) systems.

53. Former workers in the electronics industry in the Republic of Korea began to be diagnosed with leukaemia around 2005. Yumi Hwang, a former Samsung Electronics employee, died of acute myeloid leukaemia in March 2008. She was diagnosed 20 months after she began working, at the age of 19, as an operator in production line No. 3 at the Samsung Electronics Giheung Plant.[43]

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[39] Universal Declaration of Human Rights, arts. 22 and 25 (1); International Convention on the Elimination of All Forms of Racial Discrimination, art. 5 (e) (iv); Convention on the Elimination of All Forms of Discrimination against Women, arts. 11 (1) (e) and 14 (2) (c); Convention on the Rights of the Child, art. 26; International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families, art. 27; and Convention on the Rights of Persons with Disabilities, art. 25. The Special Rapporteur notes that the Republic of Korea has not yet ratified the ILO Employment Injury Benefits Convention, 1964 (No. 121).

[40] Committee on Economic, Social and Cultural Rights general comment No. 19 (2007) on the right to social security, para. 2.

[41] See e.g. *Challenging the Chip: Labor Rights and Environmental Justice in the Global Electronics Industry*, Ted Smith and others, eds. (Temple University Press, 2006).

[42] www.nature.com/news/2006/061016/full/news061016-13.html.

[43] In 2013, Ms. Hwang's story was made into a movie called *Another Promise*.

54. As of January 2015, more than 350 former workers in the electronics industry, of which approximately 130 have died, had alleged that they had developed various diseases.[44] Victims had suffered from cancer, including lymphoma, malignant brain tumours, myelogenous leukaemia and non-Hodgkin's lymphomas, as well as aplastic anaemia, reproductive abnormalities and other health impacts. All former workers described to the Special Rapporteur are young females, including several in their early twenties. With many female workers of childbearing age, the alleged victims extend to the children of former workers. For example, the Special Rapporteur heard from a mother who had been pregnant during her employment and subsequently given birth to a child with birth defects.

55. The Special Rapporteur heard testimony from former Samsung workers (all women) and their family members about tasks performed in the manufacture of semiconductor chips, such as dipping semiconductors into a chemical solution by hand to remove unnecessary parts and manually sorting and testing chips under high temperatures or voltages, releasing fumes. Former workers explained that they would still smell fumes from the workplace long after returning home. Neither the former workers nor the family members of the deceased could name the substances they had used in the workplace. The former workers of Samsung Electronics also described the pressure that they worked under at the time to meet production targets. They explained that they were often in a state of chronic fatigue and stress due to their 12-hour rotating shifts, working six days a week in addition to preparing for regular mandatory exams outside of working hours (unpaid). They described the constant pressure placed on them to train and to pass tests to perfect their workmanship, along with pressures not to unionize and insufficient training on chemical safety.

56. Samsung would not disclose which substances were used during the time of employment of the alleged victims, claiming that it was confidential business information. Samsung explained that it does require suppliers to submit a letter of warranty that chemical formulas purchased do not contain hazardous substances. The Special Rapporteur reiterates that, under international laws, global policy frameworks and national law, health and safety information on hazardous substances should not be confidential.[45] Samsung Electronics claims no hazardous substances are used in its production processes. Information was not provided by the company to justify this claim, clarify the categorization of "hazardous" or to explain if and when changes to chemicals used in production processes were implemented.

57. There is strong evidence that hazardous substances are used in electronics manufacturing. Apple Inc. has stated that it has eliminated or plans to eliminate the use of certain hazardous substances in the production of its electronics. Of note, many of these substances were used in Apple's electronics supply chain during the period of employment of the alleged victims at Samsung Electronics.[46] Also, Apple has stated that it has yet to phase out certain hazardous substances in power cords in the Republic of Korea due to an inability to obtain Government approval.[47] The Special Rapporteur is deeply concerned about the withholding of or failure to generate information about toxic chemicals in order to shield corporate liability.

58. In addition to the lack of transparency about hazardous substances used or released in the workplace, critical information about alleged victims was not disclosed by the

[44] See http://cafe354.daum.net/samsunglabor.

[45] A/HRC/30/40.

[46] http://qz.com/663763/six-of-the-worst-toxins-apple-says-it-has-phased-out-of-its-products. (Lead was phased out in 2006, mercury in 2009, brominated flame retardants from "thousands of parts" in 2008, and beryllium in "new" products.)

[47] Ibid.

Government, businesses or civil society to the Special Rapporteur. However, the Special Rapporteur had the opportunity to meet with several victims and victims' family members, Samsung Electronics, the Mediation Committee, and members of the Government. The following summary is based on those discussions and subsequent follow-up.

59. In response to the case of Ms. Hwang and others, in 2007 the Korea Occupational Safety and Health Research Institute carried out an epidemiological investigation at the Samsung Electronics Giheung Plant but did not find any carcinogen that might have caused leukaemia. Subsequently, in 2008, the Institute carried out a public health study on 200,000 workers in the semiconductor industry, with a result that showed no statistical significance for leukaemia.

60. Based on the result of the above-mentioned investigations in 2007 and 2008, the Korea Workers' Compensation and Welfare Service decided that the health impacts on Ms. Hwang and other semiconductor workers did not qualify as an industrial accident. Since June 2007, out of 54 Samsung employees who filed for industrial accident compensation, three applications were accepted, 25 were not accepted and the rest are undecided.[48] The Service rejected applications from several former semiconductor workers suffering from occupational disease in adherence to its strict requirement of a causal relationship based on medical evidence and following a requisite investigation.

61. In 2009, at the request of the Ministry of Labour, Samsung Electronics Co. Ltd., SK Hynix, and Amkore Technology Korea Inc. commissioned the Seoul National University R&DB Foundation to evaluate the health hazards of their manufacturing facilities and to develop and implement improvement plans accordingly.

62. According to the Government, it has engaged in some preventive activities such as providing safety manuals for semiconductor manufacturing workers, helping a semiconductor business establish a health management task force to ensure implementation of a health management plan, and forming a health management and assessment committee for the semiconductor sector to assess whether each business has properly improved its health management and encourage it to fix insufficiencies.[49]

63. Apart from these investigations and the industrial accident compensation insurance scheme, the Special Rapporteur notes a surprisingly low level of action taken by the Government, the primary duty bearer when it comes to respecting, protecting and fulfilling the rights of workers and of victims to an effective remedy. The Special Rapporteur observed considerably more active involvement by relevant business entities, namely, Samsung Electronics and SK Hynix, in the attempt to resolve the dispute with former workers.

64. In 2008, Samsung Electronics and Supporters for the Health and Rights of People in the Semiconductor Industry (SHARPS, also known as Banolim) started bilateral negotiations. However, disagreement between former workers during the prolonged negotiations led to the formation of a second group, the Samsung Occupational Disease Family Committee (Family Committee). The Family Committee proposed a mediation process, and in December 2014 the Mediation Committee, comprising three independent experts, was established.

65. After eight months of negotiations, the Mediation Committee proposed a three-part recommendation: prevention of recurrence, compensation and apology. To implement the prevention and compensation parts, the Mediation Committee proposed the establishment

[48] Response from the Ministry of Employment and Labour dated 22 October 2015.
[49] Ibid.

of an independent organization with 100 billion won (S85.8 million) provided by Samsung Electronics.

66. In response to this recommendation, the Family Committee expressed the view that speedy compensation should be a priority, and rejected the establishment of the independent organization. Samsung Electronics did not accept the proposal. In July 2015, Samsung Electronics announced that it would create an internal, unilateral and company-run fund to provide compensation. That compensation committee was to be in accordance with the recommendation by the Mediation Committee, and included all disease groups recommended by the Mediation Committee, except miscarriages and infertility, and included both employees of Samsung Electronics and on-site contractors.

67. Over 150 applications were made to Samsung Electronics for compensation. As of May 2016, Samsung Electronics claimed it had compensated 110 former workers affected with the specified diseases and had physically presented apology letters from the chief executive officer to those subject to compensation.[70] The Special Rapporteur understands there are concerns regarding how the compensation process adhered to the recommendations of the Mediation Committee and encourages all parties to increase transparency and participation in this regard.

68. Also in January 2016, Samsung Electronics reversed its previous position on "prevention". It agreed with other parties to establish a three-member Ombudsman Committee to conduct an audit of the efforts of Samsung Electronics relating to prevention and propose recommendations for improvement. The Special Rapporteur welcomes the establishment of the Ombudsman Committee, and looks forward to its implementation with both transparency and meaningful public participation by all stakeholders.

69. Following the progress and development of the Samsung Mediation Committee, SK Hynix established an independent industrial public verification committee composed of seven external experts. Since then, the SK Hynix committee has carried out epidemiological studies and noted the difficulty of establishing a causal relationship between the working environment and occupational diseases such as cancer and certain rare diseases. The SK Hynix committee recommended that the scope of compensation include all disease that could in any way be related to the semiconductor industry, as well as miscarriages and rare incurable diseases.

70. In November 2015, SK Hynix announced that it would accept all of the recommendations made by its committee and that it would establish an internal compensation committee composed of external experts. The Special Rapporteur welcomes this development, in particular, the acceptance by SK Hynix of including miscarriage and infertility in the scope of the agreement, in line with safety in working conditions, including the safeguarding of the function of reproduction. As of January 2016, SK Hynix had identified and compensated 39 former workers. It is unclear what measures are or will be in place to prevent recurrence.

71. The long path to resolving these cases illustrates the considerable difficulty workers face in demonstrating a sufficient causal relationship to realize their right to an effective remedy for the impacts of toxic chemicals.

72. For a disease to be recognized as an occupational disease under article 5 (1) of Industrial Accident Compensation Insurance Act by the Korea Workers' Compensation and Welfare Service, there must be a "proximate causal relationship" between the worker's duties and disease. Article 34 of the Enforcement Decree of the Industrial Accident

[70] Response received from Samsung Electronics dated 29 January 2016, e-mail dated 30 May 2016.

Compensation Insurance Act stipulates the specific conditions, in particular, that "causal relationship between the work-related injury and the disease should be medically recognized".

73. In contrast to the strict standard applied by the Korea Workers' Compensation and Welfare Service pursuant to article 34 of the Enforcement Decree of the Industrial Accident Compensation Insurance Act, courts in the Republic of Korea take a more lenient approach to the issue of causation. The Supreme Court has ruled that the claimant has the burden of proving the causal relationship, however, the causal relationship need not be proven medically or scientifically but can be inferred from the consideration of various situational factors.[51] Consideration of all the circumstances, such as the health of the worker at the time of employment, possible explanations for the disease, whether any hazardous substances existed in the workplace and the amount of time the worker spent in the workplace, makes possible the conclusion that there is a proximate causal relationship between the worker's duties and the disease.

74. In 2014, the Seoul Administrative Court held that the deduction can be made that there is a proximate causal relationship between the former workers' diseases and their duties.[52] The Supreme Court also said that the question of whether a proximate causal relationship exists should be judged on the basis of the health and physical conditions of the worker concerned and not an average person.[53] Most recently, the Seoul Administrative Court reversed the decision of the Korea Workers' Compensation and Welfare Service and acknowledged ovarian cancer to be an occupational disease. It further stressed that, for rare diseases such as ovarian cancer, a more relaxed standard for assessing causality should be applied.[54]

75. Noting the disparity among the Korea Workers' Compensation and Welfare Service industrial accident compensation scheme, decisions by courts in the Republic of Korea, and the dispute resolution committees established by Samsung Electronics and SK Hynix, the Special Rapporteur is concerned about the difficulty in accessing compensation under that scheme due to the high burden of proof imposed on the claimants. The Government's criteria for work-related diseases were revised in 2013. The Special Rapporteur emphasizes that States are obligated to refrain from interfering with the enjoyment of the right to social security.[55] The burden upon the claimant to prove causation between the health impacts from which workers suffer and the hazardous substances in the workplace can be a significant inconvenience and obstacle, often because of difficulty in using or accessing information.

2. Chemical disasters

76. The number of environmental incidents, such as chemical disasters and oil spills, more than doubled between 2004 and 2010 (from 45 cases to 102 cases), while the number of chemical accidents rose from 13 incidents on average per year to over 70 cases in 2013.[56] The Government explains that the number increased because, after the Gumi hydrofluoric

[51] Supreme Court of Korea (99du10103), 26 January 1999, and Supreme Court of Korea (2003du12530), 9 April 2004.

[52] Seoul Administrative Court (2013gudan8751), 7 November 2014.

[53] Supreme Court of Korea (2000do4538), 27 July 2001, and Enforcement Decree of Industrial Accident Compensation Insurance Act, art. 34 (4).

[54] Seoul Administrative Court (2013guhap53677), 28 January 2016.

[55] Committee on Economic, Social and Cultural Rights general comment No. 19, para. 41.

[56] Ministry of Environment and Korea Environment Institute, "Liability, compensation and relief system for damages from environmental pollution", No. 38, p. 5.

acid leak in 2012, the Government asked companies to immediately report chemical accidents and public awareness of chemical safety increased.

77. One major chemical accident was the hydrofluoric acid leak in Gumi, which occurred on 27 September 2012 at the Hube Global chemical plant, killing 5 workers and injuring 18 others, including plant employees and emergency personnel. The damage on property, including restoration costs, amounted to 55.4 billion won.

78. Another accident took place at the Samsung Electronics plant in Hwaseong City, where hydrofluoric acid first leaked on 27 January 2013. As a result, one person died and four were injured. Subsequently, on 2 May 2013, three external contract workers were partially exposed to diluted hydrofluoric acid at Samsung's semiconductor manufacturing facility in Hwaseong City. The workers received immediate first aid attention on site and were admitted to hospital for further examination.

79. Other accidents include hydrochloric acid leakage in Sangju (12 January 2013), an explosion of a sulphur removal reactor in Yeosu (25 August 2004), leakage of approximately three tons of hydrochloric acid while it was being transported on a highway in Chungnam (5 May 2004) and leakages of chlorine gas in Siheung (17 August 2006).

80. The Special Rapporteur welcomes the recent enactment of the Liability Act to help ensure that victims have access to an effective remedy, as well as legislative changes to prevent accidents. He also notes the studies and measures implemented by Samsung Electronics to prevent the recurrence of similar accidents. He encourages the State and businesses to ensure that protections apply to both employees and contractors.

C. Children

81. Children are among those most at risk of harm from toxic and otherwise hazardous substances. Children have higher levels exposure, as they breathe in more air and consume more food in comparison with their body mass. Exposure during sensitive periods of development — fetal and early childhood — may have a serious impact on the physical and mental health of children.

82. The Special Rapporteur notes the State's obligation to realize the right of children to the highest attainable standard of health, taking into account environmental factors. The Committee on the Rights of the Child has emphasized the importance of regulation of business in order to protect the rights of children, including from the effects of environmental harm.[11] States must regulate and monitor the environmental impact of business activities that may compromise children's right to health.[12]

83. The Special Rapporteur welcomes the efforts made to identify hazardous substances contained in objects with which children frequently come into contact and to minimize children's exposure to those substances.[13] However, the Special Rapporteur notes a fragmented and complex allocation of responsibilities across numerous ministries for protecting children from hazardous substances, which may have contributed to protection gaps.

[11] Committee on the Rights of the Child general comment No. 16 (2013) on State obligations regarding the impact of the business sector on children's rights, para. 31.

[12] Committee on the Rights of the Child general comment No. 15 (2013) on the right of the child to the enjoyment of the highest attainable standard of health, para. 49.

[13] See generally, I. COREA, *Environmental Review 2015*, vol. 3, chap. 6, p. 5.

84. Several of the cases discussed in the present report describe impacts on the rights of children, raising questions regarding the protection measures put into place by the Government. One situation brought to the attention of the Special Rapporteur was the case of artificial grass on school playgrounds.

85. In 2006, the Ministry of Education and the Korea Sports Promotion Foundation implemented a policy to install artificial grass in school playgrounds. In 2006, media reports claimed that heavy metal had been found in the artificial grass.[60]

86. The Ministry of Environment and the Ministry of Education carried out inspections in 2007 and 2009. In 2010, a standard for the maximum amount of heavy metals permissible in artificial grass was established by the Korean Standards Association under the Ministry of Trade, Industry and Energy. Before this, no standard had existed.

87. In 2014, several years after the Government's inspections, the Korea Sports Promotion Foundation and the FITI Testing and Research Institute tested artificial grass in 1,037 schools. These schools had installed artificial grass prior to the adoption of the standard in 2010. The inspection tested for toxic substances such as lead, cadmium, mercury, hexavalent chromium, four types of volatile organic compounds and eight types of polycyclic aromatic hydrocarbons. These substances can lead to cancer and can have harmful impacts on reproduction.[61] In 2014, the tests found toxic substances present in the artificial grass of 941 schools, 173 of which had levels that were found to be above the permissible levels specified by the Korean Standards Association.[62] In response, the Ministry of Education and the Ministry of Culture, Sports and Tourism jointly provided funding to replace the artificial grass at the 173 schools, which was completed in May 2016.

88. The Special Rapporteur expresses grave concern that children attending elementary schools with toxic artificial grass are likely to have been regularly exposed to unquestionably hazardous substances, some with no known safe level of exposure, for up to six years. It is troubling that the artificial grass was installed without a standard for permissible levels of toxic chemicals, and that nearly 200 surfaces that exceeded the standard remained in schools after the standard was established, despite government investigations. Deterioration of the artificial grass over time may result in increased risk of exposure for children as substances are liberated.

89. Artificial grass is one of thousands of products that may contain hazardous substances to which children may be exposed. The Special Rapporteur emphasizes that robust monitoring of products, water, food, soil and air for hazardous substances is important before they are used in order to guarantee a healthy and safe environment for children.

D. Communities living close to hazardous conditions

90. The Special Rapporteur wishes to reiterate the interpretation of the right to health in the International Covenant on Economic, Social and Cultural Rights, as comprising the protection of a population against exposure to harmful substances, such as radiation and

[60] Media coverage by Korean Broadcasting System, December 2006.

[61] See e.g. WHO fact sheets on cadmium (2010) and mercury (2016), available from www.who.int/ipcs/features/cadmium.pdf?ua=1 and www.who.int/mediacentre/factsheets/fs361/en.

[62] Full results available (in Korean) from www.kgreens.org/?post_type=news&p=3542.

toxic chemicals, or other detrimental environmental conditions that directly or indirectly impact human health.[51]

91. Since 2003, exposure to pollutants and health impact surveys have been conducted for residents of industrial complexes with concerns regarding environmental diseases or high pollutant emissions.[52]

Manufacturing facilities

92. During the visit, the Special Rapporteur met with several community members greatly impacted by factories operating close to their homes. Often, it is the marginalized and those living in vulnerable situations who are most affected by the establishment of industrial factories and urban planning undertaken to facilitate the revitalization of the economy.

93. A prominent example of local residents suffering from severe pollution is the current situation in the city of Gimpo. As of 2013, there were more than 6,000 registered factories and an estimated 4,000 unregistered factories in Gimpo.[53] The Special Rapporteur saw houses and rice fields surrounded by factories, many just a few metres away.

94. There has been a proliferation of small factories in Gimpo in recent years, primarily due to relaxed licensing requirements, which allow all types of factories to be located on the condition that certain hazardous substances will not be emitted. The deregulation commenced in 2008 as an initiative to promote economic activity and to revitalize the economy.[54] The licensing process is based solely on information submitted by the applicant.

95. The Special Rapporteur heard residents' concerns about the impacts of soil and groundwater contamination on subsistence farms and famous regional crops, such as rice, and their health concerns. He observed the presence of magnetic metal shavings inside residents' homes, and heard allegations of intimidation and violence against concerned residents by business owners. There are no safety zones demarcating residential areas and factories. As a result, fine metal filings accumulate throughout homes, rendering them uninhabitable.

96. Epidemiological studies by the Government in 2013 and 2015 found elevated levels of toxic chemicals such as arsenic, copper, nickel and zinc in certain soil samples. Urine and blood tests of residents also showed the presence of manganese and nickel at above-average levels.[55]

97. When the Special Rapporteur met with local Government officials in Gimpo City, he observed the completely overstretched and limited human and technical resources available to monitor approximately 10,000 factories to prevent harm, respond to complaints from residents and enforce relevant laws.

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[51] Committee on Economic, Social and Cultural Rights general comments No. 4 (1991) on the right to adequate housing, No. 12 (1999) on the right to adequate food and No. 15 (2002) on the right to water.

[52] ECOREA, *Environmental Review 2015*, vol. 3, chap. 6, pp. 2-3.

[53] Factories smaller than 500 m² are not required to register. (Hong Cheol Kim, "A case study on environmental injustice in non-urban planned management area and its solutions", *Seoul National University Public Interest and Human Rights Law Review*, vol. 15, p. 11.)

[54] For instance, the deletion of article 5 on limiting the location requirement for factories that may cause environmental pollution in the guidelines for development of industrial complexes.

[55] Hong Cheol Kim, "A case study on environmental injustice in non-urban planned management area and its solutions", p. 18.

Power plants

98. The Special Rapporteur visited a residential area near coal-fired thermal power plants in Dangjin, a city in Chungcheong province. The first petrochemical complex was built in 1991; subsequently, in 1999, Dangjin Thermal Power Plant started operations. Dangjin Thermal Power Plant, under Korea East-West Power Co. Ltd., is currently operating eight coal-fired thermal power plants of a 500,000 kilowatt scale and is planning to construct an additional generator of a 1 million kilowatt scale by 2016. Nearly 32,000 tons of coal are burned in Dangjin every day. According to Chungcheongnam-do province's 2014 health effects investigation in five areas, residents near Dangjin's coal-fired thermal power plants have slightly higher levels of heavy metals in their blood and urine, compared with two control groups in Cheongyang and Hongseong, in Chungcheong province. However, their levels were lower than the maximum safe levels under WHO standards for heavy metal concentrations in human body.[68] Nevertheless, the victims allege health damages, such as bronchial asthma, pneumonia and dermatitis, linked to hazardous substances other than heavy metals.

99. In 2014, nuclear energy produced 30 per cent of electricity in the Republic of Korea.[69] As of 2015, 25 nuclear power plants were in operation in the country. The exclusion area is 560-700 meters from the centre of the nuclear plant for light-water reactors and 914 meters for heavy-water reactors. However, as this distance is measured from the centre of the plant, many civilians live close to nuclear power plant sites. According to a 2010 statistical survey, the number of residents living within 10 km of a nuclear plant was roughly 11,000 for Wolseong, 25,000 for Gori, 12,000 for Uljin and 13,000 for Yeonggwang.[70]

100. The possible impacts from such proximity include cancer and other adverse health impacts resulting from the leakage of radioactive substances like tritium into drinking water and soil. The risks of low-dose exposure to hazardous substances, particularly for children, are a matter of scientific debate. A local resident living near Gori nuclear power plant for 20 years and his wife who had been diagnosed with thyroid cancer filed a damage suit against a Korea Hydro and Nuclear Power plant. The Court ordered the plant to pay $12,600 in damages.[71] The appeals process is ongoing. The plant argues that there is no confirmed causal relationship between nuclear power plants and the occurrence of thyroid cancer.

101. Radioactive wastes generated from nuclear power plants has been stored in temporary storage in nuclear power plant sites; however, with the saturated capacity of temporary storage, a facility for the wastes was required. Gyeongju applied to host an intermediate-level radioactive waste disposal facility site and was selected after a referendum among local citizens in four cities in November 2005. The Special Rapporteur had the opportunity visit the nuclear disposal facility in Gyeongju and learned about the safety measures in place to guarantee the health and safety of the residents living in the vicinity. The Special Rapporteur also heard concerns regarding the rapidly decreasing storage capacity for high-grade nuclear waste.

Military bases

102. Since 1962, the military base located next to Daechun beach in Boryeong, Chungcheongnam-do, has been operational and used by United States Forces Korea and the

[68] Information received from a civil society organization.
[69] www.knca.or.kr/eng/index.html.
[70] www.nei.org/Knowledge-Center/Nuclear-Statistics/World-Statistics.
[71] Eastern Branch of Busan District Court (2012gahap100380), 17 October 2014.

Republic of Korea Air Force. The shooting range borders two communities: Shinheuk-dong (inhabited by 42 families, or approximately 70 people) and Samhyun-ri (inhabited by 100 families, or approximately 250 people).

103. Since 2008, local residents have officially reported pollution and 79 cases of cancer among approximately 320 residents. The Institute for Occupational and Environmental Health published research that compared major cancer occurrence rates in residents of Boryeong and in the general population. It was discovered that lung cancer rates were three times higher and stomach and liver cancer were five times higher among Boryeong residents. The Government has conducted environmental surveys on the region, finding two wells with a substance "reasonably anticipated to be a human carcinogen",[72] but has not been able to determine the cause of the high rate of cancer in the region. No information was provided on measures taken to realize an effective remedy for those suffering from cancers and other disorders.

104. The Special Rapporteur is concerned that the proximity of factories, power plants, military bases and other facilities that may release hazardous substances is adversely affecting the right of nearby residents to an adequate standard of living, including adequate food, housing and continuous improvement of living conditions.[73] The Special Rapporteur is concerned that the right of residents to housing, in particular with regard to the habitability and location of housing, are not protected.

V. Conclusions and recommendations

105. **The Special Rapporteur commends progress made by the Government of the Republic of Korea in reducing the impacts of toxic substances, for recent legislative changes in response to major chemical disasters, and its stated commitment to protect and promote human rights. In the spirit of cooperation and dialogue, the Special Rapporteur recommends that the Government take decisive steps to implement the recommendations outlined below to minimize the negative impact of hazardous substances and wastes on human rights.**

106. **With regard to legislation, the Special Rapporteur recommends that the Government of the Republic of Korea:**

(a) **Implement legislation, including the Liability Act and the Act on the Registration and Evaluation of Chemical Substances, while completing a thorough assessment of current legislative frameworks and enforcement capacities to prevent human rights impacts and ensure access to an effective remedy for harm, paying attention to those most at risk and bearing in mind recent cases of impacts in the Republic of Korea and recommendations by the national human rights institution;**

(b) **Ensure that all laws and policies concerning hazardous substances and wastes provide the greatest protection to those who are at the greatest risk of harm, including children, women, the elderly, communities near sources of pollution or contamination, workers and others who are at elevated risk of harm;**

(c) **Monitor and enforce legislation requiring businesses to conduct human rights due diligence on the potential impacts of hazardous substances;**

[72] Tetrachloroethylene (PCE or perc), which is classified as such by the United States National Toxicology Program (2013).

[73] International Covenant on Economic, Social and Cultural Rights, art. 11.

(d) Urgently increase efforts to prevent harm to communities living near sources of ongoing pollution or contaminated sites, and to ensure that victims in these areas realize their right to an effective remedy, including compensation and remediation or relocation, consistent with human rights principles;

(e) Undertake a robust study on the existing recourse of victims, including workers and consumers, to an effective remedy for harm that may be due to hazardous substances and wastes, paying particular attention to the burden placed on victims to establish causation, and develop and implement solutions to address challenges facing victims in accessing an effective remedy, in consideration of the recommendations contained in the findings of that study and those of the national human rights institution, as recommended below;

(f) Ensure that information is available to prevent exposure to hazardous substances, protect human rights and ensure that victims have the information necessary to realize their right to an effective remedy in administrative and judicial systems. The Special Rapporteur underlines that States have a duty, and businesses a responsibility, to ensure that information about hazardous substances is available and accessible, and that it functions to protect the rights of everyone;

(g) Increase efforts to ensure that health and safety information about hazardous substances is never confidential, and for this purpose ensure the enforcement of existing legislation or the strengthening of said legislation where necessary;

(h) Increase efforts to identify the intrinsic hazards of industrial chemicals used or produced in, or imported into, the country, in particular by increasing its efforts to identify intrinsic hazards due to chronic exposure, including cancer and endocrine disruption, the combination effects of exposure to mixtures of toxic chemicals, and the impacts of childhood exposure during critical periods of development;

(i) Establish a centralized mechanism to monitor all human rights impacts of hazardous substances and wastes, paying particular attention to children, women, workers in all sectors and older persons, and guarantee that adequate and comprehensive prevention measures are taken as a result;

(j) Expand support for victims of the deadly humidifier sterilizers;

(k) Give a broader mandate to the National Institute for Chemical Safety to ensure coherence and cooperation across ministries, including with respect to human rights principles;

(l) Ensure that sufficient resources are available for regional and local governments tasked with monitoring and enforcement of laws on pollution control;

(m) Ratify the Optional Protocol to the International Covenant on Economic, Social and Cultural Rights and take up the recommendations of the Human Rights Committee, especially on the right to unionize.

(n) Require that businesses in the Republic of Korea respect human rights, in both their activities and their business relationships, including international supply chains;

(o) Ratify the Basel Convention Ban Amendment;

(p) Ensure that the Ministry of Health plays an active role in preventing harm from hazardous substances and wastes.

107. **The Special Rapporteur recommends that the national human rights institution:**

(a) **Examine the challenges faced by victims of chronic exposure to hazardous substances, including workers and children, who may develop diseases many years after exposure, in establishing causation and accessing an effective remedy, and make recommendations to relevant ministries;**

(b) **Closely examine challenges presented by victims of hazardous substances in meeting their burden of proof in order to access an effective remedy under administrative and judicial proceedings.**

108. **The Special Rapporteur encourages all businesses operating in the Republic of Korea to implement the Guiding Principles on Business and Human Rights in their activities and business relationships, paying particular attention to the potential and actual impacts of toxic chemicals in their activities and supply chains.**

109. **The Special Rapporteur sincerely commends Samsung Electronics for its spirit of cooperation, openness and continuing dialogue with him. He acknowledges internal changes by Samsung Electronics and steps taken to realize the right of former workers to an effective remedy. He recommends that Samsung Electronics and other implicated businesses:**

(a) **Ensure that all former workers and contractors harmed by toxic chemicals in the manufacture of their products are indeed compensated, at a minimum according to recommendations of the Mediation Committee;**

(b) **Cooperate actively in good faith and with public participation with the Ombudsman Committee, and ensure that the resulting recommendations are fully implemented with transparency to prevent recurrence at Samsung Electronics and other companies in the electronics industry;**

(c) **Continue collaboration with human rights institutions nationally and internationally to share lessons learned and establish itself as a leading entity at the intersection of human rights and business operation, including with respect to toxic chemicals.**

110. **The Special Rapporteur welcomes the recent acknowledgements by Oxy Reckitt Benckiser and Reckitt Benckiser in May 2016 regarding their commitment to ensure that the victims of toxic humidifier sterilizers have access to an effective remedy. He recommends that Reckitt Benckiser:**

(a) **Ensure that all victims are identified and receive compensation;**

(b) **Implement measures that will prevent a recurrence of similar incidents, and share mistakes made and lessons learned with the global community so that other Governments and businesses may avoid similar mistakes;**

(c) **Ensure that all victims receive a sincere apology, permanent commemoration at a location of significance, and other elements of an effective remedy, including substantiated assurance of non-repetition;**

(d) **Provide all other aspects of an effective remedy as warranted by subsequent investigations.**

111. **The Special Rapporteur is deeply appreciative of the advocacy of civil society on behalf of the affected victims he encountered during the mission. He encourages the Government and the National Human Rights Commission to protect the rights of these human rights defenders to champion the cause of victims of toxic chemicals in**

the future. He encourages civil society actors to continue their efforts while also looking to the impact of business activities and business relationships of the Republic of Korea abroad.

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Promotion and protection of all human rights, civil, political, economic, social and cultural rights, including the right to development

Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes on his mission to Germany*

Note by the Secretariat

In the present report, submitted pursuant to Human Rights Council resolution 27/23, the Special Rapporteur shares his findings and recommendations from his visit to Germany.

* The present document was submitted late so as to include the most up-to-date information possible.

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Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes on his mission to Germany**

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** Circulated in the language of submission only

I. Introduction

1. In the present report, submitted pursuant to Human Rights Council resolution 27/23, the Special Rapporteur on the implications for human rights of the environmentally sound disposal of hazardous substances and wastes, shares his findings and recommendations from his mission to Germany from 30 November to 7 December 2015.

2. The Special Rapporteur identifies several good practices undertaken by the European Union, the Government and industry to prevent harm from hazardous substances and wastes and draws attention to the ongoing challenges he observed.

3. The visit included meetings with executive and senior representatives from the Federal Foreign Office; the Ministry of the Environment, Nature Conservation, Building and Nuclear; the Ministry of Economic Affairs and Energy; the Federal Institute for Risk Assessment; the Ministry of Health; and the Ministry of Justice and Consumer Protection.

4. In addition, the Special Rapporteur met with representatives of the German Institute for Human Rights, a distinguished member of Parliament and a representative of the industrial trade union for construction, agriculture and environment (IG Bauen-Agrar-Umwelt), and held an open meeting with civil society representatives. The Special Rapporteur also travelled to meet with representatives of the companies BASF in Ludwigshafen and Bayer Crop Science in Leverkusen, and the German Chemical Industry Association in Frankfurt.

5. The Special Rapporteur enjoyed the fullest cooperation from all government authorities with whom he dealt. He thanks the German Institute for Human Rights and civil society representatives for their support, and expresses his appreciation for the spirit of cooperation and openness that characterized his meetings with BASF, Bayer and the German Chemical Industry Association.

II. Comments on the legal framework and its implementation

6. Germany is the largest chemical producing country in Europe, the world's fourth largest chemical market (after China, the United States of America and Japan) and is home to BASF, the biggest chemical company in the world, and Bayer, which at time of writing was bidding to purchase Monsanto, the multinational agrochemical. Not surprisingly, Germany plays a key role in the implementation of European Union chemicals legislation and in discussions on future policy directions.

7. Germany has ratified every international human rights treaty except the Optional Protocol to the International Covenant on Economic, Social and Cultural Rights and the International Convention on the Protection of the Rights of All Migrant Workers and Members of their Families. Germany is also party to all global treaties for chemicals and waste management and expects to become party in the near future to the Minamata Convention on Mercury, which is not yet in force. It is also party to the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention) of the Economic Commission for Europe, and its Protocol on Pollutant Release and Transfer Registers.

8. In the following section, the Special Rapporteur looks at recent changes in the legal framework for hazardous substances and waste in the European Union and Germany and identifies some good practices from a human rights perspective.

A. Industrial chemicals

9. In 2006, the European Union adopted Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, which aims to generate, collect and assess information on the hazardous properties and uses of the approximately 30,000 most widely used industrial chemicals. Industrial chemicals are also subject to Regulation (EC) No. 1272/2008 on the classification, labelling and packaging of substances and mixtures, which implements the Globally Harmonized System of Classification and Labelling of Chemicals and various legislation for specific types of products.

10. REACH is regarded as the strongest law for industrial chemicals in the world. It includes revolutionary protective measures for chemicals of known risks for human health and the environment, such as an authorization process for "substances of very high concern" and a more traditional restriction process. It also contains numerous precautionary aspects, recognizing the vast uncertainties arising from the failure to require companies to generate and make available health and safety information for tens of thousands of industrial chemicals on the market today. A specialized agency, the European Chemicals Agency, was created to help manage the implementation of REACH.

11. REACH represents a paradigm shift for the protection and realization of human rights implicated by industrial chemicals, such as the right to information, the right to an effective remedy, the right to a healthy environment and many others.

12. Information on hazardous substances should be available, accessible and functional for everyone, consistent with the principle of non-discrimination. In realizing the right to information, the REACH has a number of features. First, it contains tiered health and safety requirements for all industrial substances produced or imported at or above one ton per year. This pragmatic requirement, known as "no-data, no-market", shifts the burden of proof away from public authorities and onto relevant businesses. Second, it requires industry to share information on the use of hazardous industrial chemicals up and down the supply chain to help ensure that substances are being used safely and information is current. In this way, the right to information also contributes to workers' and consumers' rights. Third, health and safety summaries are made available to Governments around the world, enabling those with fewer resources to avoid duplication of efforts and enhance cooperation. Fourth, consumers have the right to contact businesses to inquire whether a chemical linked to cancer, hormone disruption or other health and environmental hazards are found in certain products if they are on the "candidate list". Finally, the information generated is enabling businesses to transition to safer chemicals and safer products. These are good practices for the realization of the right to information about industrial chemicals, and implementation of the Guiding Principles on Business and Human Rights.

13. As a consequence of realizing the right to information on industrial substances, REACH is enabling Governments to better protect the rights to the highest attainable standard of health, to safe drinking water, to adequate housing and to a healthy environment. As information is necessary for judicial and non-judicial remedies, it is reasonable to foresee that the right to an effective remedy is better enabled by REACH.

14. However, during the process of developing REACH and its current implementation, it has been subject to criticism, particularly from industry, Governments outside the European Union and non-governmental organizations. For example, Governments have accused REACH and other European Union chemical laws as "discriminatory, lack a

[1] See A/HRC/30/40 para. 54.

legitimate rationale and pose unnecessary obstacles to trade".[3] The Special Rapporteur disagrees, as the realization of human rights requires not only the full implementation of REACH, but also additional measures to better protect children and other at-risk populations and subpopulations.

15. REACH intends for hazardous chemicals to be replaced by safer alternatives when they can be identified. "Substances of very high concern" are identified in the European Chemicals Agency "candidate list".[4] Currently there are 169 substances waiting on the list that are candidates to be subject to the REACH authorization requirements. While substitution of those substances is not mandatory at this stage, it is a long-term objective. If a substance subsequently is put under the authorization scheme (currently 31 substances), its future use requires an authorization by the European authorities, which can only be granted if the risk to human health or the environment is adequately controlled or if socioeconomic benefits outweigh the risk and no suitable alternative substances or technologies exist. When a substance is placed on the "candidate list", a notification of obligations is sent to the whole supply chain, which can benefit consumers' right to information.

16. Germany plays a prominent role in the implementation of REACH and other European Union chemicals legislation and in discussions on future policy directions. It makes frequent proposals to the European Chemicals Agency, is a major contributor of substance evaluations and contributes to risk management processes.

17. The Ministry of Environment noted that in many respects the public is given a "right on information" under REACH and the Regulation on classification, labelling and packaging. It was noted that, for example, the public has the right to know whether a product contains a substance of very high concern, and to comment on publicly available proposals on restrictions and harmonized classifications of substances.

18. It also noted several challenges in the implementation of REACH. Fundamentally, the information provided by industry is not always adequately scrutinized. Compliance was questioned with information needed for the assessment of hazardous properties missing or incomplete for numerous substances registered. Questions were raised about the willingness of and incentives for industry to fully implement REACH.

19. Along these lines, the Ministry of Environment noted a study taken on its own initiative that documented that only five per cent of high tonnage substances are clearly in compliance with REACH requirements for information on toxicity for reproduction. For 78 per cent of the substances, either no data was available (11 per cent) or data requirements were "adapted".[5] It remains to be clarified for the vast majority of high tonnage substances in the European Union whether sufficient information on prenatal developmental toxicity and toxicity for reproduction is available. This information is necessary in assessing the potential health impacts of industrial chemicals in products and the environment on fertility and on (developing) children, and required for implementation of the Convention on the Rights of the Child.

20. The Ministry also noted the substantial difficulty in assessing causation for illnesses linked to long-term exposure to even one toxic substance, let alone the mixture of toxic substances people are exposed to throughout life. Comprehensive information is only provided for substances greater than 100 tons, which represent about 4,100 substances of

[3] Office of the United States Trade Representative, *2014 Report on Technical Barriers to Trade* (Washington, D.C.), available from https://ustr.gov/sites/default/files/2014%20TBT%20Report.pdf.

[4] See http://echa.europa.eu/addressing-chemicals-of-concern/substances-of-potential-concern/svhc-roadmap-to-2020-implementation.

[5] https://www.umweltbundesamt.de/publikationen/reach-compliance-data-availability-of-reach.

the 30,000 substances subject to REACH. Various ministries and agencies confirmed that this is a serious challenge for victims to realize their right to a remedy.

21. BASF is the largest REACH registrant. Compared with other companies, BASF has an ambitious "product stewardship" goal, to re-evaluate risk assessments for more than 99 per cent of its products sold globally in quantities greater than one metric ton, by 2020. BASF told the Special Rapporteur that safety data sheets are prepared for all of the company's chemical products, despite being legally required to do so only for hazardous substances. The company also includes a risk assessment on the "uses" of the chemicals, which represents a significant and necessary improvement.

22. BASF also has the dubious honour of having the most chemicals in production that are identified thus far as "substances of very high concern". Regarding its efforts to phase out harmful chemicals, BASF explained the value of proactively finding internal solutions ahead of European Union regulators. It categorizes its products into four groups relative to their sustainability, to allow for internal discussions about substitution or phase out at every level of operation.

23. Regarding the fact that chemicals banned in the European Union are still manufactured by the company in its operations outside the region, BASF also explained that phasing out a substance is not something that can be done quickly, so phase-out gaps between production sites will vary.

24. Despite the reporting requirements of REACH, companies remain seriously challenged in tracing the use of chemicals throughout the supply chain, which poses grave threats to human rights.

25. The German Chemical Industry Association, representing 1,600 companies and accounting for 95 per cent of the chemical industry in Germany, told the Special Rapporteur that the German chemical industry is dedicated to fulfilling the Strategic Approach to International Chemicals Management, through the implementation of its Global Product Strategy 2006.

26. The Association highlighted two German initiatives of the Global Product Strategy: the "responsible care" programme, which aims to improve safety and the protection of health and the environment; and the sustainability initiative called "Chemie"", which is a common effort with the employers' association and the major union of the chemical industry. It also advised that all major German chemical multinationals have signed the United Nations Global Compact on sustainable development.

27. The Global Product Strategy was held out to be the industry's contribution to promoting human rights and safety by raising and harmonizing standards for the handling of chemicals throughout the world, in developing, emerging and industrialized nations alike. It applies to all chemical companies and captures the entire product and value chain. The German Chemical Industry Association stated it has Global Product Strategy documents for 5,000 substances and hopes to reach the goal of 20,000 substances by 2020.

28. While greater transparency and communication with customers and the public is welcomed from a human rights perspective — not least to enhance public confidence in the chemical industry — the Special Rapporteur is mindful that such commitments are merely voluntary.

29. The German Chemical Industry Association also offered some examples of capacity-building initiatives by its member companies, who are implementing the Global Product Strategy and a regulatory toolbox developed with the United Nations Environment Programme (UNEP) so that countries can determine which regulatory setting is most fit for purpose to safeguard health and environment.

Sustainable chemistry

30. The Ministry of the Environment and the German Federal Environment Agency are developing and initiating an international centre for sustainable chemistry called the International Sustainable Chemistry Collaborative Centre, which aims to enhance the sound management of chemicals. The German authorities are inviting interested stakeholders at the national and international levels to participate in the work of the centre and join the network that aims to create a common platform to drive sustainable development and progress.

31. The centre will be based in Germany and is scheduled to open officially in 2017. By setting up the centre, Germany hopes to consolidate national expertise and international experience to organize and intensify an exchange on research and the application of results.[7]

B. Pesticides

32. The primary laws governing the approval and use of pesticides[8] in Germany are the Plant Protection Products Regulation and the Biocides Regulation. In recent years, Germany, together with other member States of the European Union, has strengthened the level of protection to human health and the environment from hazardous pesticides.

33. One of the most innovative features of recent changes to European Union pesticides laws is the prohibition on the use of certain pesticides linked with cancer, reproductive effects, hormone (endocrine) disruption and other adverse health effects, and certain physical properties. The so-called "hazard-based" approach of European Union pesticides legislation is based on evidence that protection of human health and the environment cannot be adequately assured for certain pesticides with such properties. The "hazard-based" approach to pesticides is grounded in the principle of precaution, provided in the Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community.

34. The Special Rapporteur considers the "hazard-based" approach to be in line with the universality of human rights and the uncontrollable risks that certain pesticides pose to those rights. It is a commendable step by the European Union to protect the human rights of everyone, including agricultural workers and children.

35. Relevant regulations are in the beginning stages of implementation. Concerns have been raised regarding the pace of implementation and derogations from the requirements of the Regulations. In particular, concerns were raised regarding the delayed adoption of criteria for endocrine (hormone) disruptors.

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[7] See German Chemical Industry Association (VCI), "Chemie report. Information for VCI member firms – special issue – Product Stewardship. Think global – and act global", Frankfurt, Germany (January 2010).

[8] See https://chemical-watch.24513-fostering-sustainable-chemistry.

[8] The term includes, among others, herbicides, fungicides, insecticides, acaricides, nematicides, molluscicides, rodenticides, growth regulators, repellents, rodenticides and biocides.

36. Concerns were also raised regarding the disparity between the levels of protection afforded those in Germany from hazardous pesticides and those in countries outside the European Union, discussed below.

37. Major German pesticide companies, as members of the trade association CropLife International, have fully adopted the Food and Agriculture Organization of the United Nations (FAO) and World Health Organization (WHO) International Code of Conduct on Pesticide Management and its accompanying guidelines set standards for pesticide management aimed at reducing health and environmental risks.

38. Under the Strategic Approach to International Chemicals Management, an international policy framework, work is progressing on strengthening global measures on highly hazardous pesticides, many of which are prohibited from use in Germany and the rest of the European Union. There have been calls for the phase-out of highly hazardous pesticides that, according to the FAO can be substituted with safer alternatives and non-chemical alternatives.[7]

39. Bayer informed the Special Rapporteur that they had a human rights policy in compliance with the FAO International Code of Conduct on the Distribution and Use of Pesticides, and a stewardship policy that they say reflects the whole life cycle of a product. For each life cycle step, Bayer says it works on best management practices with the objective of human safety, worker operator safety, residues in food, consumer safety and environmental aspects. It also claims to work as an industry on training materials to ensure the safe use of pesticides.

40. The Special Rapporteur was pleased to learn of Bayer's phase-out policy to remove all highly hazardous pesticides considered to be carcinogenic from their portfolio by 2012, and of its process of "portfolio screening" (covering insecticides and fungicides in 2011 and herbicides in 2015). However, highly hazardous pesticides remain in its portfolio with no target date for phase-out.

41. The Special Rapporteur is concerned that, rather than substituting hazardous pesticides with safer alternatives, it would seem that Bayer prefers mitigation strategies that carry greater risks for workers and communities, such as wearing protective personal clothing and improvements on labelling. The Special Rapporteur considers that typically the only effective mitigation strategy for hazardous pesticides is a concerted effort to develop and adopt safer alternatives.

C. Energy production

42. The energy policy known as the *Energiewende* aims at replacing fossil fuels (coal, oil and natural gas) and nuclear-based energy with cleaner, renewable energy sources, such as wind (onshore and offshore) and solar power (thermal and photovoltaic), and to a lesser extent hydropower and biomass.

43. Germany is working towards halving its primary energy consumption by 2050 and expanding renewable energies to 60 per cent of gross final energy consumption.[8] These targets go beyond European Union legislation and the national policies of other European States. The policy objectives have resulted in a huge expansion of renewables, particularly onshore wind power and solar photovoltaic.

[7] See www.ohchr.org/en/NewsEvents/Pages/DisplayNews.aspx?NewsID=16510&LangID=E.

[8] See Federal Ministry for Economic Affairs and Energy, "Report of the Federal Government on Energy Research 2014" (Berlin).

44. At the time of the 2011 nuclear accident in Fukushima, Japan, a quarter of electricity in Germany was generated by 17 nuclear reactors. After Fukushima, Germany reassessed the role of nuclear power and committed itself to phasing out the use of nuclear power by 2022. Today, 16 per cent of electricity is generated by eight nuclear reactors. One challenge will be for Germany to reach its goal without resorting to coal-fired power plants.

45. One of the most controversial issues for Germany has been determining the site of the final storage of nuclear waste, culminating in a common decision by all members of Parliament, including the opposition, to search throughout Germany for potential new sites. A commission published its report in July 2016. The Special Rapporteur was pleased to hear that, at every stage of the decision-making, there has been strong public participation and that Germany is developing very high standards for underground geological nuclear storage in the absence of international standards.

D. Waste management

46. Of the 339 million tons of waste that Germany generated in 2013, 71 per cent was recycled. By 2015, and in line with its Landfill Ban legislation (2005), the German waste management sector employs more than 250,000 people with an annual turnover of 50 billion euros.

47. Responding to the Special Rapporteur's question concerning good waste management practices for other countries, the Ministry of the Environment emphasized the importance of having legislation in place with a strong administration and the authority to implement the law, by monitoring, applying standards and sanctions, and using the best technology available. This can only be achieved by adequate financing on the basis of the "polluter pays principle" to ensure that any waste generated pays for the costs of its proper management.

48. The Ministry referred to the fact that 90 per cent of countries in the world do not manage waste from the polluter pays principle but through State subsidies from general taxes, with few politicians prioritizing waste management in their budgets, whereas in Germany the sector is successful because the State budgets for high standard technology for the day-to-day running of waste management (collection and recycling) and polluters are willing to pay for these services.

E. Electrical and electronic equipment

49. Waste streams in the European Union generated from electrical and electronic equipment, such as computers, television sets, refrigerators and mobile telephones, is expected to grow to more than 12 million tons by 2020.

50. A major initiative and good practice is the European Union end-of-life "take-back" directives for electrical and electronic equipment, batteries, accumulators and vehicles. These measures can help control potential hazardous releases during disposal. Germany took a very active lead in developing the respective pieces of European Union legislation to address this problem.

51. Companies selling electrical and electronic goods in the European Union must conform to the European Union legislation for electrical and electronic equipment, which includes: (a) the Waste Electrical and Electronic Equipment Directive;[7] and (b) the

[7] See http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32012L0019.

Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment.[11]

52. Both Directives impose obligations and outcomes that member States must achieve but it is open to each member State to choose the best framework to fulfil its obligations. Therefore, national rules for implementing each Directive will differ from country to country.

53. The Ministry of the Environment mentioned the challenges in distinguishing between waste and non-waste at the border and in accurately determining the amount of illegal shipments of electronic waste from Germany to other countries.

54. Germany commissioned a national study (2009-2010), in which it was calculated that 150,000 tons of electronic-waste were exported illegally from Germany in 2008.[12] The Ministry questioned the reliability of the figures on the basis that it is extremely difficult to know accurately the content of containers, and was confident that German industry was usually not involved in illegal shipments.

F. Ship-breaking

55. German ship owners operate the world's fourth largest merchant fleet in terms of vessels and have been linked to widespread contamination of the food, water and air of local communities, in addition to fatalities and toxic chemical exposure among workers, including child and migrant workers, who dismantle ships in hazardous and deadly conditions. According to assessments by civil society, but disputed by the Government, in 2014, German ship owners sold a record high of 95 per cent of their end-of-life tonnage for substandard breaking on the beaches of South Asia. Despite recent progress, the extremely poor working practices and environmental conditions prevailing in many ship-breaking yards continue to be the source of widespread concern in the international community.[13]

56. The interplay between and levels of protection afforded by the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, and the International Maritime Organization Hong Kong International Convention on the Safe and Environmentally Sound Recycling of Ships remains an issue.[14]

57. In October 2011, the majority of parties to the Basel Convention officially determined that the Hong Kong Convention did not protect people or communities from the dangers of ship-breaking as adequately as the Basel Convention. The European Union disagreed with that conclusion, and Germany is in favour of the Hong Kong Convention, which has yet to enter into force. The Special Rapporteur plans to further monitor and assess the issue.

[11] See http://eur-lex.europa.eu/legal-content/GA/TXT/?uri=celex:32011L0065.

[12] See http://www.umweltbundesamt.de/publikationen/transboundary-shipment-of-waste-electrical.

[13] See the Report of the Special Rapporteur on the illicit movement and dumping of toxic waste (E/CN.4/2000/50/Add.1) and the 2009 Report of the Special Rapporteur on the adverse effects of the movement and dumping of toxic and dangerous products and wastes on the enjoyment of human rights (A/HRC/12/26).

[14] See A/HRC/12/26. See also report of the Center for International Environmental Law, entitled "Shipbreaking and the Basel Convention: Analysis of the Level of Control Established under the Hong Kong Convention" (April 2011), available from

G. International trade and deregulatory pressures

58. Although Germany has, together with European Union member States and institutions, developed many good practices in protecting human rights from hazardous substances and wastes over the past several years, there are apparent threats to the full implementation of laws and standards that have yet to be set in certain areas.

59. For example, the German Federal Environment Agency notes that, if improperly designed, the regulatory objectives of the envisaged Transatlantic Trade and Investment Partnership agreement could adversely affect European Union environmental standards.[47] Of particular concern is the risk to the implementation of existing legislation. Indeed, there is evidence that the Transatlantic Trade and Investment Partnership has been used as an argument against improved standards for protecting human rights from the risks of toxic chemicals.[48] The European Parliament echoed the concerns of the Agency and went even further, calling for the European Union to not negotiate on the implementation of REACH and other European Union chemical and pesticide laws in the context of negotiations on the Transatlantic Trade and Investment Partnership.[49] An opinion of the German Advisory Council on the Environment recently found that controversial issues, such as the regulation of toxic chemicals and the precautionary principle, were not adequately assessed by the European Commission Sustainability Impact Assessment of the Transatlantic Trade and Investment Partnership.[50]

60. The Special Rapporteur is troubled by the recent initiatives within the European Commission that may embrace elements of what the German Environment Agency and European Parliament raised as concerns regarding the impacts of the Transatlantic Trade and Investment Partnership on European Union laws, namely, the "Better Regulation Agenda" and the European Commission Regulatory Fitness and Performance programme.

61. Given the dynamic nature of the negotiations concerning the Transatlantic Trade and Investment Partnership, the Special Rapporteur highlights one particularly problematic issue in modern trade negotiations that increasingly encroaches upon the policy space of national Governments: the low level of transparency and public participation. This concern has also been raised by the German Environment Agency and others.[51] While the European Commission has sought to increase the level of transparency, with the Government of Germany consequently having access to all negotiating proposals of the European Union and consolidated texts, the public does not have equal access or meaningful opportunity for participation. Furthermore, the failure of all negotiating parties to the Transatlantic Trade and Investment Partnership to have the same level of transparency undermines the advancements made by the Commission. The lack of public participation in trade negotiations is of serious concern to the Special Rapporteur, as trade negotiations

[47] See www.umweltbundesamt.de/sites/default/files/medien/376/publikationen/environmental_protection_under_ttip_0.pdf, p. 4.

[48] See submission of the Government of the United States to European Union consultation on endocrine disrupting chemicals (January 2015), available from www.usda-eu.org/wp-content/uploads/2015/01/United-States-Submission-Endocrine-Disrupters-2015-01-20.pdf.

[49] See European Parliament resolution of 8 July 2015 containing the European Parliament's recommendations to the European Commission on the negotiations for the Transatlantic Trade and Investment Partnership, available from http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P8-TA-2015-0252+0+DOC+XML+V0//EN.

[50] See www.umweltrat.de/SharedDocs/Downloads/EN/06_Background_Information/2016_2020/2016_07_KzU_17_TTIP_en.pdf?__blob=publicationFile.

[51] See www.umweltbundesamt.de/sites/default/files/medien/376/publikationen/environmental_protection_under_ttip_0.pdf.

increasingly seek to alter the development and implementation of laws and policies, including those for the protection and realization of human rights.

62. Given that the primary objective of negotiations concerning the Transatlantic Trade and Investment Partnership is to reduce regulatory costs by altering the implementation of existing legislation or developing new legislation in the European Union, the Special Rapporteur encourages Germany to ensure that ongoing and future trade negotiations fully respect the right to meaningful public participation and are conducted with utmost transparency where they affect laws and regulations.

III. Initiatives for stronger protection of human rights

A. Workers

63. A major source of exposure to hazardous chemicals in Germany is in the workplace, and it is estimated that about 74,000 work-related deaths may be linked to workplace exposure to hazardous substances each year in the European Union — about 10 times more than workplace accidents.[20]

64. While identification and controls for carcinogens are well developed with a specific Directive for Carcinogens and Mutagens at work,[21] there is a need to extend protection against reproductive hazards. The European Union regulation protecting pregnant women in the workplace includes a list of chemicals that is very old and not updated, which means that many chemicals of concern, like endocrine disrupting chemicals or nanomaterials, are missing.[22]

65. According to a study by the European Agency for Health and Safety at Work, around 15 per cent of European workers report handling chemical products for a quarter of their working time and 19 per cent report breathing in dust, fumes and smoke at their workplaces.[23] This study highlighted nanoparticles, ultrafine particles, man-made fibres, carcinogenic, mutagenic and reprotoxic substances, dermal exposures, exposures in waste management and the increasing use of allergenic and sensitizing substances as emerging risks.

66. Specific occupations of emerging concerns include the growing waste management industry, construction and service activities such as cleaning or home nursing. In addition, there are a growing number of workers in small and medium-sized enterprises and subcontracted jobs, where the management of chemical risks is generally poorer. The report also expresses concern about multiple exposures on emerging biological, physical and psychosocial emerging risks.[24]

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[20] See International Labour Organization, "Factsheet 84 - Expert forecast on emerging chemical risks related to occupational safety and health" (2005), available from https://osha.europa.eu/en/tools-and-publications/publications/factsheets/84/view.

[21] Directive 2004/37/EC - carcinogens or mutagens at work of 29 April 2004, available from https://osha.europa.eu/en/legislation/directives/directive-2004-37-ec-carcinogens-or-mutagens-at-work.

[22] See Council Directive 92/85/EEC of 19 October 1992, available from http://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A31992L0085.

[23] See Directive 2004/37/EC (note 21 above).

[24] Ibid.

67. REACH may not adequately protect workers, because the risks of daily exposure are primarily assessed for industrial chemicals at higher tonnage thresholds, whereas the majority of chemicals to which workers are exposed are at the lower thresholds. Since the level of hazardous substance exposure for workers is at much higher levels than the permissible exposure levels for consumers, information about adverse effects of chronic exposure is critical.

68. In Germany, 16,165 suspected cases of occupational skin disease were recorded in 2004, representing a quarter of all registered occupational diseases. Other skin diseases include chemical burns ranging from rashes to full thickness skin damage requiring grafts. Chromate is the most dominant allergen, followed by epoxy resins and cobalt in the German construction industry.[7] The German trade union IG Bergbau, Chemie, Energie says that information needs to feature more prominently on the European Chemicals Agency database, so workers can better access health and safety information.

69. Although asbestos is prohibited in Germany, it is still found in buildings and ships. Specialized training and qualifications are required to dispose of asbestos safely, for instance, in demolition or renovation, particularly for informal workers.

70. It was brought to the Special Rapporteur's attention that Germany has not put in place any specific measures to protect informal workers from the risks of hazardous substances. Currently the trade union IG Bauen-Agrar-Umwelt is campaigning for informal and migrant workers to receive basic health and safety instructions prior to working.

71. BASF informed the Special Rapporteur of its global standards for workers' safety. BASF assured the Special Rapporteur that all plants were built according to the same standards and safety levels for workers. The company's goal is to reduce work-related accidents by 80 per cent by 2020.

B. Public participation in decision-making in environmental matters

72. Public participation in environmental decision-making is implemented by the European Union Directive on Industrial Emissions, and German citizens have been accustomed to participating since the 1970s. In urban planning, participatory structures have been in place since the building law of 1976, which legally guarantees that the public must be consulted on development projects.

73. The Ministry of Justice raised the "Stuttgart 21" railway station project to the Special Rapporteur to highlight a growing unrest among the German public that their participation was not adequate, effective or meaningful, and that their concerns were not being heard or taken into account by decision-makers. In response, the Government recently established within the Ministry of Environment a dedicated unit to ensure that government obligations with regard to informal public participation processes are upheld.

74. It was refreshing for the Special Rapporteur to hear several government representatives emphasize the importance of full, effective and meaningful public participation, especially when a proposal is expected to be complicated or confrontational.

75. In Germany, in general, non-governmental organizations have the possibility to be heard in the legislative process. They can be heard during public hearings that are usually transmitted via the Internet. All such organizations have the possibility to send statements

[7] See European Agency for Health and Safety at Work, "Report - Expert forecast on emerging chemical risks related to occupational safety and health" (2009), p. 63, available from https://osha.europa.eu/en/tools-and-publications/publications/reports/TE3008390ENC_chemical_risks/view.

to the commissions of Parliament to give their point of view. Stakeholders may participate in European Chemicals Agency committee meetings, and responses to comments received are published. However, the Special Rapporteur also heard that, compared with other health and environmental policy issues, the issue of chemicals is less transparent, with fewer opportunities for meaningful participation (online or in person) and exchanges of views.

C. Right to an effective remedy

76. The right to an effective remedy is well established under international human rights law and is a core procedural right relating to environmental policymaking. For example, The International Covenant on Civil and Political Rights (art. 2, para. 3) guarantees victims of human rights violations an effective remedy. This has been interpreted to include environmental wrongs that adversely affected human rights. The two aspects to the right to a remedy are access to justice and substantive redress.

77. In Germany, the statute of limitations to gain access to a remedy for environmental harm is three years from knowledge of damage, and 30 years where there is none. In the German legal system, most legislation concerning environmental liability for damages arising from nuclear waste, hazardous substances and wastes is a matter of public law, for which the Ministry of the Environment is responsible, and does not come under the general civil liability rules, for which the Ministry of Justice is responsible.

78. One of the greatest obstacles for victims who are harmed by hazardous substances to access an effective remedy is the often insurmountable burden placed on them to prove causation between their exposure and the adverse effects that are alleged to be a result of that exposure. Thus, the Special Rapporteur welcomed the information on laws that seek to overcome this challenge for claimants and the emphasis of the Government on the prevention of exposure to minimize the risk of harm in the first place.

79. The Environmental Liability Act 1990 provides that, under certain conditions, a presumption of cause is applied that shifts the burden of proof away from the alleged victim(s). Section 6 of the Act reads: "if an installation is likely to cause the damage that occurred on the basis of the given facts of the individual case, it is presumed that the damage was caused by this installation". The Act also allows the claimant to submit a claim for information from the installation operator (section 8) and from the authorities (section 9), and provides that the right to information may only be excluded owing to reasons of confidentiality (section 8). However, there have been few compensation cases made on the basis of the Environmental Liability Act. This could be owing to the high standards by companies or to the fact that cases are being settled out of court.

80. According to the jurisdiction of the Federal Court of Justice, the burden of proof may also be shifted under the general civil liability rules (section 823 of the German Civil Code) if an installation exceeds certain emission limits.

81. In 2002, Germany changed its "*Arzneimittelgesetz*" (Law on Pharmaceuticals) to shift the burden of proof away from claimants towards strict liability comparable to article 6 of the Environmental Act. Under the Product Liability Act, the burden of proof may only be shifted according to the jurisdiction of the Federal Court of Justice.

82. In both areas of private liability — the Environmental Liability Act and Law on Pharmaceuticals — a shift in the burden of proof to reflect a victims-based approach is welcomed. However, in the area of occupational health and safety, the Special Rapporteur heard of the immense challenges still faced by workers who fall ill from toxic chemicals to access any remedy.

D. Business responsibilities to respect human rights

83. Many German businesses play a central role in international supply chains that use, produce or release hazardous substances, including hazardous pesticides. Noting the substantial number of German businesses with ties to developing countries, the Special Rapporteur was particularly interested to hear from Bayer and BASF about how business enterprises are protecting human rights in developing countries, considering that many countries do not have the same levels of public health, occupational or environmental protection as Germany.

84. Bayer does not have a separate human rights policy in addition to their policy on corporate compliance, but noted that that it needs to reflect more on human rights and the link between the use of chemicals and health and safety. With regard to Pillar 3 of the Guiding Principles on Business and Human Rights, Bayer explained that it had made its recent grievance mechanism more visible, with a compliance hot line, in 12 languages, open to its employees and the public. Bayer stated its commitment to enabling remediation in case of any adverse effects on health and safety.

85. BASF shared its February 2011 group position on human rights and provided an update of how it was incorporating human rights and the Guiding Principles into its core processes.

86. In 2010, BASF founded a voluntary chemical sector initiative entitled "Together for Sustainability" that consisted of 12 leading chemical companies that agree on the concept of a single audit for sustainability. BASF sees this initiative as an opportunity to embed human rights into upstream companies by conducting human rights due diligence in the value chain.

87. BASF indicated its willingness and described its sector-wide activities (e.g., the Chemie[1] and Together for Sustainability initiatives) to further promote the implementation of the Guiding Principles.

88. BASF participated in hearings of the National Action Plan on Business and Human Rights process. The company stressed that such processes help to better understand the huge challenges companies face with their supply chain. BASF has more than 75,000 tier-1 suppliers, an estimated 400,000 in tier 3 and perhaps 2 million in tier 8, thus demonstrating the need for effective management systems to create a cascade effect in the supply chain.

89. Throughout the Special Rapporteur's visit, key stakeholders provided information on the National Action Plan on Business and Human Rights being developed under the auspices of the Federal Foreign Office, based on the Guiding Principles on Business and Human Rights. Many ministries had been actively involved in the development of the National Action Plan and all relevant sections of society, to ensure that support was as broad-based as possible.

90. Progress on the National Action Plan is regularly updated online; the aim is for it to be passed by the Federal Cabinet in 2016. The Special Rapporteur contributed to this process in a letter dated 25 February 2016, in which he drew attention to the human rights impacts of German businesses operating abroad.[2]

[2] Available from https://spdb.ohchr.org/hrdb/32nd/public_-_OL_DEU_25.02.16_(1.2016).pdf.

IV. Issues in focus – domestic concerns

A. Child and adult exposure to toxics

91. During his visit, the Special Rapporteur repeated his concern about the health consequences of exposure during childhood and adulthood to hundreds of toxic chemicals. In terms of risk assessments and the impacts of chemicals when children are exposed, the Special Rapporteur heard from various risk assessors and ministries that one of the major gaps in the REACH dossiers is reproductive toxicity data.

Human biomonitoring

92. Human biomonitoring studies can provide important information on current exposure, data points for cause and effect and evidence of the efficiency of measures being taken to reduce exposure to hazardous substances, thereby enabling regulators to better prevent exposure and harm. Some studies have shown that over 500 different hazardous substances are found in adults and over 200 in children.

93. As such, human biomonitoring is an important tool in environmental medicine to assess and evaluate the level of internal exposure of the general population, population groups and individuals to environmental toxins. It seems that Germany also recognizes the importance of measuring the amounts of hazardous substances in its people, and the Human Biomonitoring Commission advises the Federal Environment Agency on such questions.

94. The Ministry of Health and Research also conducts a comprehensive health survey every 5 to 10 years in Germany, incorporating an environmental survey. The most recent survey, which is still ongoing, focused on children's exposure to pollutants using the same subjects in trial tests (2015-2017). The Special Rapporteur also notes that Germany has not contributed to the WHO-Coordinated Survey of Human Milk for Persistent Organic Pollutants in Cooperation with UNEP for some time (as required by the Stockholm Convention). All results should be made publicly available.

Toxics in toys

95. Toys are one of many potential sources of exposure to toxics by children and are regulated by the Toy Safety Directive 2009/48/EC and the chemical safety requirements that have applied since 20 July 2013. The Directive requires that toys are manufactured in accordance with all safety requirements and that there is no risk of adverse effects on human health due to exposure to chemical substances which toys contain. The manufacturer has to declare that each toy is compliant with the Directive by way of a "CE" mark before it is placed on the market, including a safety assessment of potential exposure to chemical hazards.

96. The Directive prohibits the use of certain toxic substances in toys. Safety standards are continually updated as the understanding of risks increases and new products are developed. Germany has played a leading role in strengthening toy regulations.

97. Still, the Special Rapporteur is troubled to hear from civil society and authorities like the Federal Institute for Risk Assessment that various toys may still contain toxic substances that are hazardous to children's health, such as carcinogens, because of derogations to the ban that could result in exposure and risk to children.

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[37] See the report of the Special Rapporteur, A/HRC/33/41.

98. The Special Rapporteur sees six remaining challenges with respect to laws and practices concerning hazardous substances in toys: (a) the new Regulation allows for higher amounts of carcinogenic, mutagenic and/or reprotoxic substances; (b) the maximum limits for heavy metals, such as antimony, arsenic, barium, lead and mercury, are higher than before the Directive;[7] (c) nickel and fragrances, which are the main causes of allergies, are still allowed and present; (d) persistent, bioaccumulative and toxic substances, as well as very persistent and very bioaccumulative substances, are barely considered in the Directive, and their substitution depends on the relatively slow implementation of REACH; (e) nanomaterials, which have unique properties and many unknown risks for children, are not covered under the Directive; and (f) by allowing manufacturers to self-certify the "CE" mark on toy products, consumers may be misled and believe "CE"-labelled toys are controlled by an independent test.

B. Risk assessment processes

Chemical mixtures

99. It is well known that human exposure to combinations of different chemical substances can result in serious adverse effects not expected from exposure to the substances individually. Children and adults have hundreds of different chemicals in their bodies. Yet risk assessments are almost always conducted on a substance-by-substance basis. The assessment of the risk to health from the hundreds of toxic chemicals children and adults are exposed to simultaneously, including before birth — the "combination effects" of exposure — presents challenges as risk assessments, which typically test exposure to single chemicals at a time, are not adequate to monitor such exposures.

100. Noting that the European Commission has indicated that "combination effects" will be one of their key areas of concern over the next five years, the Special Rapporteur raised this issue with the Federal Institute for Risk Assessment as to how they might assess combination effects, particularly when it comes to children. The Institute agreed that it is a pressing issue for human toxicology and is currently undertaking research activities to test combination effects, which presents many challenges. The Institute indicated that efforts are ongoing (e.g., on multiple residues, mixtures of pesticidal active substances and coformulants or developing new testing strategies for testing mixtures).

Endocrine disrupting chemicals

101. Human health depends on a well-functioning endocrine system to regulate the release of certain hormones that are essential for functions such as metabolism, immunity, growth and development, reproduction, sleep and mood. Endocrine disruptors alter the functions of the hormone system and consequently cause adverse effects in human health.

102. Over 800 substances are known or suspected to interfere with the normal functioning of hormone systems. However, the vast majority of chemicals in current commercial use have not been tested at all. According to UNEP and WHO in their joint 2012 report, "this lack of data introduces significant uncertainties about the true extent of risks from chemicals that potentially could disrupt the endocrine system."[8]

103. There is growing concern in the European Union and worldwide about the negative human health and environmental impacts possibly caused by endocrine disrupting chemicals. In 1999, the European Commission developed a "Strategy for endocrine

[7] See www.reach-clp-helpdesk.de/de/Downloads/PAK-Leitfaden/Leitfaden.html?__nnn=true#Leitfaden.de.

[8] See UNEP/WHO, *State of the science on endocrine disrupting chemicals* (Geneva, 2012), p. 2.

disruptors".[31] The European Union has introduced specific legislative obligations aimed at phasing out endocrine disruptors in water, industrial chemicals and pesticides. In REACH, endocrine disrupting chemicals may be considered of similar regulatory concern as substances that are (a) carcinogenic, mutagenic and/or reprotoxic, (b) persistent, bioaccumulative and toxic, or (c) very persistent and very bioaccumulative, and thus are also regarded as "substances of very high concern" (article 57 (f)). While some endocrine disrupting chemicals occur naturally, the chemical varieties are ubiquitous and can found in pesticides, electronics, personal care products and cosmetics. They can also be found as additives or contaminants in food. Endocrine disrupting chemicals are being constantly detected in humans through human biomonitoring.

104. The 2012 study by WHO and UNEP drew attention to health problems as a result of exposure to endocrine disrupting chemicals, including the potential for such chemicals to contribute to the development of non-descended testes in young males, breast cancer in women, prostate cancer in men, developmental effects on the nervous system in children, attention deficit hyperactivity in children and thyroid cancer.[32]

105. A 2012 report[33] points out that current testing and screening methods for endocrine disrupting chemicals, while useful, are inadequate for capturing the full range of adverse effects linked to endocrine disrupting chemicals. Furthermore, testing during critical windows of development is currently not being done with the most sensitive methods now available. Consequently, adequate information about which chemicals can act as endocrine disruptors and when, is severely limited.[34]

106. The Special Rapporteur raised that issue with the Federal Institute for Risk Assessment, as well as the need for increased attention. Germany and other member States of the European Union actively supported the development of criteria for endocrine disrupting chemicals. The development of criteria to reduce exposure to such chemicals is important to protect the rights of children from toxic chemicals, particularly the right of children to the highest attainable standard of health. The Special Rapporteur emphasizes the State's duty to prevent childhood exposure to toxics.[35]

107. However, the European Parliament, in a May 2016 resolution, condemned the European Commission as having breached European Union law and failed to comply with its international obligations to deliver the scientific criteria to identify endocrine disrupting chemicals on time. On 15 June 2016, the Commission published its proposal for scientific criteria for the identification of those chemicals, taking as a starting point the WHO definition in its 2012 study[36] and incorporating key points of a consensus statement that had been agreed by scientific experts at the April 2016 meeting convened by the Federal Institute for Risk Assessment.[37]

108. While the Federal Institute for Risk Assessment believes the Commission's proposal sets a high level of protection regarding endocrine disruptors for human health, including those in vulnerable situations, like children and pregnant women, the proposal has been

[31] See http://ec.europa.eu/environment/chemicals/endocrine/strategy/index_en.htm.

[32] WHO and UNEP, *State of the science of endocrine disrupting chemicals – 2012: An assessment of the state of the science of endocrine disruptors prepared by a group of experts for the United Nations Environment Programme* (Geneva, 2012), available from www.who.int/ceh/publications/endocrine/en.

[33] Dr. A. Kortenkamp et al. "State of the Art Assessment of Endocrine Disruptors" (2012), available from http://ec.europa.eu/environment/chemicals/endocrine/pdf/sota_edc_final_report.pdf.

[34] See https://surbeatitsandenvironment.wordpress.com/2012/02/29/a-major-step-forward-many-still-

[35] See A/HRC/33/41.

[36] See WHO and UNEP, State of the science of endocrine disrupting chemicals (note 32 above).

[37] See https://chemicalwatch.com/46782/breakthrough-hailed-as-edcs-logjam?q=consensus+statement.

criticized by endocrinologists and other scientists, as well as ministries of the environment and members of parliaments from various European Union member States, civil society and industry. Among criticism levelled is that there is an unreasonably high burden of proof to categorize substances as endocrine disrupting chemicals and thus trigger regulatory action, and concern that there has been a departure from both the precautionary principle and the "hazard-based" approach found in applicable European Union laws, which are considered to be good practices.

Glyphosate

109. During the mission, the Special Rapporteur was made aware of a controversy over the potential carcinogenicity of glyphosate, the most widely used herbicide in the world, more commonly known under the original Monsanto trade name "Roundup".

110. The risk assessment carried out by the European Food Safety Authority and the Federal Institute for Risk Assessment (published on 12 November 2015) was in contradiction to the hazard identification by the International Agency for Research against Cancer, which had classified glyphosate as "probably carcinogenic to humans". A risk assessment by a joint WHO/FAO panel reached a similar conclusion to the Federal Institute for Risk Assessment and the European Food Safety Authority. There are important differences between studies, including the type of assessment, consideration of ingredients other than glyphosate that are sold in the formulation and the consideration of different scientific studies in assessments.

111. The differences of opinion on the dangers of glyphosate raise the issue of access to scientific information regarding health and safety of pesticides and how the principle of precaution is applied in practice in the European Union. The Special Rapporteur notes that, under international law, health and safety information about toxic chemicals should never be confidential. Furthermore, in such instances of scientific uncertainty, the European Union principle of precaution must be applied pursuant to the Treaty of Lisbon. The Special Rapporteur will continue to monitor the issue.

C. Imported products

112. In 2006, 48 per cent of detected unsafe products in the European Union originated from China, 21 per cent from the European Union and 27 per cent were of unidentified origin, whereas 25 per cent of all detected unsafe products were children's toys, a very high proportion of which were marketed in the European Union and sourced from China. Recalls of unsafe products such as toys do not provide effective consumer protection because they are often declared late and a means of last resort, whereas the average return rate for toy recalls is very low, meaning that the vast majority will remain with consumers.

113. In August and September 2007, a series of large-scale voluntary recalls in the European Union relating to unsafe toys that were harmful to health raised the public alarm that, in spite of product harmonization and a Union-wide market surveillance system, unsafe products were still produced, imported and marketed within the region. The discovery of lead paint in toys manufactured in China led to the introduction of broad new toxicity regulations for a wide range of children's products.

See European Parliament motion for a resolution on dangerous toys, available from www.europarl.europa.eu/sides/getDoc.do?type=MOTION&reference=B6-2007/0355&language=RO.

V. International cooperation and impacts abroad

114. One of Special Rapporteur's greatest concerns is the indisputably wide gap that remains between the measures introduced in Germany to reduce risks and protect human rights from hazardous substances, and the measures introduced outside Germany, particularly in developing countries where German businesses have substantial relationships.

115. In the next several years, the production and use of chemicals is expected to accelerate sharply and rapidly in developing countries and economies in transition. This will present great challenges to Governments and business enterprises in terms of their responsibilities to respect human rights through their business relationships.

A. Global treaties for chemicals and wastes

116. Throughout the mission, the Special Rapporteur raised his particular concern about human rights impacts abroad. For all stages of the life cycle of hazardous substances — extraction, production, use, emission and disposal — strong global standards are necessary to prevent double standards from emerging outside the European Union and to ensure that German businesses respect human rights at home and abroad. However, much work remains in developing strong global standards.

117. Today, just over two dozen hazardous substances are regulated under international treaties for "chemicals and wastes" throughout their life cycle. It was estimated by the European Union that in 2001 there were over 1,000 substances of very high concern, not including hundreds of hazardous pesticides and various other potential pollutants.

118. Chemicals linked to cancer, hormone disruption, neurodevelopmental disabilities and other adverse health impacts often do not fall within narrow the scope of existing, legally binding international treaties for chemicals and wastes. Many of the substances are unquestionably hazardous, such as asbestos, lead, cadmium and certain phthalates and other endocrine disruptors. This can and arguably is leading to wide disparities between the toxic chemicals used in developing countries and those used in the industrialized world, including products containing dangerous chemicals that are for consumers in Germany. To help fill a massive global regulatory gap for toxic chemicals, a non-binding policy framework, the Strategic Approach to International Chemicals Management, was adopted in 2006 with a mandate to achieve the sound management of chemicals by 2020. The mandate of the Strategic Approach to International Chemicals Management is the broadest and yet receives the least funding of the chemicals and wastes cluster.

B. Exportation of highly hazardous pesticides

119. The FAO/WHO Code of Conduct on Pesticide Management applies to Governments and pesticide business enterprises to manage the risks associated with pesticide use wherever they are sold. The industry should rely on the Code, particularly when operating in countries that have not yet established or are unable to effectively operate regulatory control over commercial pesticide activity, which applies to many developing countries where the most adverse environmental and public health impacts of pesticide use are felt.

120. If relevant standards cannot be met and pesticide use presents an unacceptable risk to the public, the Code requires pesticide companies to halt the sale of those products.[39] According to the Pesticide Action Network, developing countries use only 25 per cent of global pesticides, yet 99 per cent of acute pesticide-related fatalities occur there.[40]

121. The Special Rapporteur remains deeply concerned by the double standards that currently exist. Although many highly hazardous pesticides are banned or restricted in the European Union because their safe use cannot be guaranteed, European businesses continue to produce them, sometimes specifically for export and use in non-European Union countries without adequate legislation or enforcement of existing laws, creating unmanageable risks and a high likelihood of grave impacts to human rights.

122. There has been repeated evidence of chemical manufacturing companies taking risk mitigation attempts that have been unsuccessful in protecting the lives and health of workers and communities who are at particular risk.

123. When the Special Rapporteur met with Bayer, he also raised the long-standing court case of the Taucamarca community in Peru, in which Bayer was implicated. The 1999 case concerned an incident whereby 24 schoolchildren died and 26 others were severely injured after mistaking white, odourless powder found in a bag as being powdered milk, when in fact it was a deadly pesticide (parathion) that was banned in the European Union at the time of the incident.

124. The European Center for Constitutional and Human Rights brought to the Special Rapporteur's attention a report[41] in which it claimed Bayer CropScience AG and Syngenta AG, a Swiss company, were in breach of the FAO/WHO Code. Bayer has pledged to adhere to the Code through its membership of CropLife International. Yet surveys carried out in September 2014 and March 2015 in Punjab, India, suggest that Bayer and Syngenta are manufacturing, distributing and selling pesticide products in violation of the Code. The two companies were selected because of the dominant position they hold in the Indian and world markets.

125. The report of the European Center for Constitutional and Human Rights focused on four pesticides produced by Bayer and two by Syngenta that were classified as moderately or highly hazardous. The results of the survey alleged that Bayer and Syngenta breached the FAO/WHO Code because the labels lacked essential information, and because company representatives and users were inadequately trained and lacked access to protective personal equipment.

126. Bayer stated that it complied with the FAO/WHO Code and provided training materials to all farmers, including in developing countries. With regard to concerns about the continued sale of highly hazardous pesticides in the developing world, Bayer argued this was due to uncontrollable misuse.

127. The Special Rapporteur also heard the argument that businesses had a responsibility to continue to produce certain pesticides so that farmers could feed their families and the world, yet found such arguments very difficult to reconcile against the disproportionate number preventable deaths and injuries that continue to occur in developing countries and the need to address the distribution of food imbalance throughout the world.

[39] See report of the European Center for Constitutional and Human Rights, available from www.ecchr.eu/en/our_work/business-and-human-rights/pesticides/q-a-pesticides-monitoring-reports-to-fao.html.

[40] See www.panna.org/pesticides-big-picture/pesticides-101.

[41] See report of the European Center for Constitutional and Human Rights (note 38 above).

C. Worker standards

128. The Special Rapporteur is particularly concerned that European Union business enterprises, beyond Germany businesses, are exporting their manufacturing activities and the risks to workers of toxic chemicals — to developing countries. Post-production, European Union businesses can import a product that claims to be "free of hazardous substances" even though hazardous substances were used in the supply chain outside the European Union.

129. This practice is comparable to the supply chain of clothing that originates, for example, from a garment factory in Bangladesh that fails to respect workers' rights, including against sexual violence, and unlawfully targets labour leaders with intimidation, threats and violence.[32] It is also similar to the global trade and supply chain in cobalt, a key component in rechargeable lithium-ion batteries, which may originate from artisanal miners in the Democratic Republic of the Congo, including child labourers who suffer health consequences from prolonged exposure to cobalt without even the most basic protective equipment.[33]

130. These two examples also highlight one of the major problems of REACH where business enterprises are seriously challenged in tracing the use of industrial chemicals throughout the supply chain, despite the reporting requirements of the Regulation.

VI. Conclusions and recommendations

131. **The Special Rapporteur acknowledges the prominent role that the Germany and its chemical industry plays in the implementation of REACH and other European Union chemicals legislation, and in discussions on future policy directions on international cooperation. However, even if German businesses phased out or stopped manufacturing and selling highly hazardous pesticides abroad, another business enterprise from another country could just as likely take over that market, so a global approach is required to protecting human rights.**

132. **The Special Rapporteur makes the following recommendations to the Government with regard to strengthening the international legal framework for hazardous substances and chemicals management:**

(a) **Strengthen global standards for protection against the adverse effects of toxic chemicals;**

(b) **Prioritize the transition from highly hazardous pesticides to safer alternatives as a matter of urgency;**

(c) **Strengthen the Strategic Approach to International Chemicals Management for the period beyond 2020 to better address gaps in chemicals and waste treaties;**

(d) **Identify priorities for additional legally binding obligations on chemicals and wastes at the global level for chemicals that cannot be managed in an**

[32] See Human Rights Watch, report entitled *"Whoever raises their head suffers the most" – Workers' Rights in Bangladesh's Garment Factories* (2015), available from www.hrw.org/report/2015/04/22/whoever-raises-their-head-suffers-most/workers-rights-bangladeshs-garment.

[33] See Amnesty International, *"This is what we die for" – Human rights abuses in the Democratic Republic of the Congo power the global trade in cobalt* (May 2015), available from www.amnesty.org/en/documents/afr62/3183/2016/en/.

environmentally sound manner, with a view to meeting various relevant targets under the Sustainable Development Goals.

133. The Special Rapporteur also makes the following recommendations to the Government:

(a) Strengthen the involvement of civil society organizations and public participation in chemical policymaking;

(b) Enhance national surveillance of chemicals in products and strengthen information exchange;

(c) Improve the enforcement of chemical regulations by better control;

(d) Control waste streams to be exported;

(e) Support environmental labelling and information for consumers;

(f) Increase information for marginalized persons and those in vulnerable situations, especially pregnant women and those who work or live with children, about protection measures, especially endocrine disrupting chemicals;

(g) Implement risk reduction measures, especially for those in vulnerable situations.

134. The Special Rapporteur makes the following recommendations to the German chemical business enterprises with regard to strengthening the international legal framework for chemicals management:

(a) Engage in capacity-building with developing countries, with a view to eliminating the manufacture-use-release of hazardous substances, including an orderly phase-out of highly hazardous pesticides globally, and transitioning to safer alternatives;

(b) Work with industry partners to develop global mechanisms to finance the cost of chemicals management at the national and/or regional levels for developing countries.

135. The Special Rapporteur makes the following recommendations to the Government with regard to preventing human rights violations at home and abuse abroad by German business enterprises:

(a) Raise awareness and build capacity on the respective obligations and responsibilities of the Government and all business enterprises to prevent and address adverse business-related human rights impacts in relation to hazardous substances and waste, in line with the Guiding Principles on Business and Human Rights;

(b) Set out clear expectations in the National Action Plan on Business and Human Rights and legally require all business enterprises in Germany to respect human rights throughout their operations and conduct human rights due diligence in relation to their domestic and international operations and supply chains, including the elimination of double standards;

(c) Provide international cooperation and financial assistance to developing countries that are host States to German companies to prevent human rights abuses, especially those where such abuses have been documented;

(d) Strengthen mechanisms for public participation and dialogue between Government, business, trade associations and civil society on business and human rights issues.

136. The Special Rapporteur makes the following recommendations to German chemical business enterprises with regard to embedding the Guiding Principles on Business and Human Rights:

(a) Comply with their responsibility to respect international human rights by adopting a human rights policy and carrying out human rights due diligence to identify, prevent and mitigate adverse human rights impacts due to, inter alia, hazardous substances and wastes, and account for how they address such impacts;

(b) In assessing actual or potential adverse human rights impacts due to hazardous substances and wastes, ensure meaningful consultation with affected individuals and communities, paying attention to marginalized persons or those in vulnerable situations and ensuring that they have timely and complete information about proposed projects, products or changes that may affect them and the capacity to put forward their opinions;

(c) Pay particular attention to how human rights risks from hazardous substances and wastes affect women, children, the elderly and men differently;

(d) Establish and operationalize grievance mechanisms in line with Principle 31 of the Guiding Principles, in order to identify and address adverse impacts;

(e) Engage in the development and implementation of the National Action Plan on Business and Human Rights.

137. The Special Rapporteur makes the following recommendations to the German Chemical Industry Association with regard to business and human rights:

(a) Bring to the attention of the Board any allegations of any chemical company being involved in human rights abuses and take appropriate measures;

(b) Ensure all member companies embed and implement the Guiding Principles on Business and Human Rights.

138. The Special Rapporteur recommends that civil society:

(a) Continue to raise awareness about the respective obligations and responsibilities of the Government and business enterprises under international human rights law to prevent and address human rights impacts related to hazardous substances and wastes due to the operations of business enterprises;

(b) Consider holding business human rights awareness-raising events for government agencies that focus on hazardous substances and waste issues;

(c) Continue to champion the rights of the most vulnerable at home and abroad and human rights defenders;

(d) Engage in the implementation of the National Action Plan on Business and Human Rights.

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Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes on his mission to the Republic of Korea: comments by the State

Note by the Secretariat

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Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes on his mission to the Republic of Korea: comments by the State*

I. Introduction

1. The Government of the Republic of Korea welcomes the visit of the UN Special Rapporteur (SR) on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes to the Republic of Korea from 12 to 23 October 2015 and is pleased to have had a constructive dialogue with the SR during his visit.

2. The Government of the Republic of Korea also welcomes the high appreciation of the SR on its legal framework for hazardous substances and wastes, and is pleased with his recognition of relevant government policies. The Government takes note of his recommendations to minimize negative impact of hazardous substances and wastes on human rights, and will give due consideration to them.

3. The Government of the Republic of Korea thanks the SR for the opportunity to make the following comments.

II. Recent changes to the legal framework for hazardous substances and wastes

4. **Paras 10, 41, 106(a), (c):** The *Act on Registration, Evaluation, etc. of Chemical Substances* (ARECS) was enacted in May 2013 and enforced in January 2015 aiming to protect life and property of people and the environment from chemical substances. The act is designed for preventing damages on public health and the environment caused by chemicals, managing chemicals properly, and responding swiftly to chemical disasters.

5. The key content of ARECS is obliging manufacturers and importers of chemicals to generate hazard and risk data on the chemicals and make them available to downstream users. As ARECS is a similar system with EU REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals [Regulation (EC) NO 1907/2006]), it needs to be understood in comparison with EU REACH.

6. Chemical substances fall into two categories: the existing substances (the so-called phase-in substances) that are already placed on the market, and the new substances (the so-called non-phase-in substances) that newly enter the market. Under EU REACH, both existing and new chemical substances shall be registered with their hazard data when manufactured or imported over 1 ton a year in quantity.

7. ARECS requires all new substances, even below 1 ton a year, to be registered with their hazard data. It means that ARECS imposes stronger obligation than EU REACH in terms of new substances. As for the registration of existing substances, EU REACH and ARECS have differences. ARECS has a system called "Priority Existing Chemicals (PECs)" for step-by-step expansion of the list of existing substances obliged to be registered. When a substance is deemed to have potential to cause risks, the Government

* Circulated in the language of submission only.

may designate the substance as a PEC and require the manufacturer or importer to generate and register the hazard data even when the quantity is less than one ton.

8. In a staged manner, the Government will expand the list of PECs to the point when all of the approximately 15,800 existing substances distributed in the domestic market are registered with their hazard data. However, ARECS is still at an early stage of the implementation, infrastructures for generating the hazard data are not sufficient, while businesses are not in the full readiness. Taking it into account, the Government first designated 510 substances that are distributed in large quantity and internationally well-known with their hazards as PECs and required them to be registered by 2018.

9. The Government is planning to continue designating more existing substances as PECs to be registered later than 2018, and making vigorous efforts for earlier designations of additional PECs by strengthening related infrastructures. Meanwhile, the Government already has hazard data of 8,459 existing substances out of the 15,800, as it conducted assessments on those substances from 1992 in accordance with the former *Toxic Chemicals Control Act* (TCCA).

10. EU REACH has a policy to gradually expand the list of existing substances subject to the registration based on the quantity of use throughout a ten-year period from the introduction of the system. In terms of giving enough time for registration of existing substances, ARECS and EU REACH share a same intent.

11. ARECS neither limits the scope of substances subject to registration to industrial substances known as hazardous nor is premised solely on assessment data of the European authorities. When designating PECs, the Government considers reliable overseas data on risk and hazard assessment of the chemicals, as well as the quantity distributed and domestic data. Assessment data of the European authorities is used only one of the references in determining PECs. It is the Government itself that sets priorities and makes decisions on PECs. In addition, unnecessary duplication of animal (especially vertebrates) tests can be avoided by using existing data, like under EU REACH, if appropriate.

12. **Para 106(c)**. The *Commercial Act* amended by Act No. 10600, on 14 April, 2011 requires listed company with certain scale of assets to have one or more compliance officer under Article 542-13. And in April, 2012 the Ministry of Justice established the "Model Compliance Guidelines". According to the *Commercial Act* and the Guidelines referred above, compliance officer shall manage business activities to prevent legal risk that may be caused by violating the relevant legislations on hazardous substances. In this way, companies are being expected to exercise due diligence.

III. Institutional framework for chemicals management

13. None.

IV. Issues in focus

A. Protecting consumers from hazardous substances in products

14. **Paras 30-36, 41-42, 106(j)**. In 1991, TCCA entered into force, and the Government's chemical hazard review system was introduced. A company that intends to manufacture or import a new chemical substance shall take the hazard review before manufacturing or importing the substance. Hazard review on existing substances that had been placed on the market prior to the enforcement of TCCA was conducted by the Government with its budget.

15. In 1996, Yugong (now SK Chemical) requested a hazard review of PHMG for the use of antimicrobial for carpets. The result said that, as a high polymer compound, PHMG had low level of toxicity and volatility and that no adverse health impact on consumers was predicted when it would be used for carpet. Hence, the Government notified Yugong that the substance was not a toxic substance. The hazard review on PGH was requested by Sun Plus Co., Ltd. in 2003 for the use of antimicrobial for rubbers, woods and textile. The Government notified Sun Plus that PGH was not a toxic substance as it did not meet the standards for designating toxic substances.

16. In 2001, UK-based Reckitt Benckiser (RB) acquired the Korea-based Oxy Co., Ltd (Oxy) and the Oxy Reckitt Benckiser (Oxy RB) was established. It was around 2001 when Oxy RB started to manufacture and sell humidifier disinfectant that contained PHMG which had undergone the Government's hazard review for the usage of antimicrobial for carpets but not for humidifier disinfectant. The humidifier disinfectant OxySakSak first came to the market in 1998 by Oxy, but at the time the product's ingredient was Preventol R80, not PHMG. Until 2011, about 600,000 humidifier disinfectants were sold annually.

17. Around 2001, the Government was not able to recognize that humidifier disinfectant products containing PHMG were being manufactured and sold, as Oxy RB withheld the information that they used the substance. Using PHMG for humidifier disinfectant meant that the substance's main exposure route was changed from skin into respiratory system, yet no additional hazard test was conducted for the new use. Consequently, the negligence of Oxy RB which did not fully verify the safety of its product directly led to the humidifier disinfectant incident.

18. On the request of the Seoul Asan Medical Center that had experienced occurrences of patients suffering lung injury with unknown causes, the Korea Centers for Disease Control and Prevention (KCDC) under the Ministry of Health and Welfare began an epidemiological investigation in April 2011. Finding that the products might have caused pulmonary fibrosis, the Ministry of Health and Welfare advised the public to refrain from using the concerned products in August 2011, and issued an order to withdraw humidifier disinfectant products from the market in November 2011.

19. In February 2012, the Government announced the final result of the epidemiological investigation confirming that the cause of the lung injury was humidifier disinfectant. The Government identified that PHMG and PGH had inhalation toxicity and caused pulmonary fibrosis, but could not confirm those properties in CMIT and MIT.

20. In December 2011, relevant government agencies together established the Comprehensive Measures for Safety Management on Household Chemical Products to tighten the safety management of household chemical products. The Comprehensive Measures re-categorized humidifier disinfectant as a quasi-drug while requiring re-assessment of the risks of raw materials used for household chemical products of safety concerns and developing safety standards for new products and previously uncontrolled products. In 2012 and 2013, PHMG, PGH, CMIT and MIT, all of which were ingredient substances of humidifier disinfectants, were designated as toxic substances. In July 2012, the Korean Fair Trade Commission imposed penalty surcharges to humidifier disinfectant sellers including Oxy RB, Homeplus and Cefu for falsely indicating product information. Oxy RB filed lawsuit against the penalty, but lost the case at the Supreme Court in December 2014.

21. In August 2013, the Government decided to pay medical and funeral expenses to victims first, and exercise the right to indemnity against the companies that had caused the damages later. It was a decision to help victims who were struggling with economic hardships during prolonged lawsuits or needed to undergo costly lung transplant surgery. In October 2013, the Government designated diseases caused by humidifier disinfectant as

"environmental disease" under the *Environmental Health Act* which set legal basis for better supporting the victims.

22. The Government received reporting from a total of 530 persons who applied for the investigation to decide whether their health damages were caused by humidifier disinfectant through two reporting periods. Of those, 221 alleged victims including 95 who have died were acknowledged with the causation between humidifier disinfectant and their health damages. Since July 2014, the Government has been paying medical expenses to the 221 victims, and paid funeral and medical expenses to the bereaved families. The Government ran the third reporting period in 2015, in which 752 persons applied for the investigation. While the investigation on the cases reported during the third period is still underway, the fourth reporting period is currently open to the public since April 2016.

23. The Government has acknowledged victims who suffer lung injuries that have strong causal relationship with humidifier disinfectant. Taking one step further, the Committee on Investigation and Judgement of Humidifier Disinfectant Damage convened on 28 April 2016 to collect expert opinions about mild damages such as rhinitis and bronchitis and possibility of health damages other than lung injury. Based on the committee discussion, the Government decided to work further to clarify the causal relationship and establish damage recognition criteria required for their judgement by strengthening ongoing survey and research activities. Through the efforts, the Government will come up with measures to provide remedy to those victims who suffer from health damages other than lung-related illnesses.

24. From the second half of 2016, victims of severe damages will be provided with living expenses and nursing costs from the Government, in addition to medical and funeral expenses.

25. Preventive measures also have been taken to avoid accidents similar to the humidifier disinfectant incident. In January 2015, ARECS entered into force. The Act requires chemicals manufacturers to register new use of substances and to inform the registered uses of their substances to downstream users. In other words, a manufacturer who intends to change the use of a substance shall register the hazard data again.

26. Also, 15 types of household chemical products including sterilizer, insecticide, and preservative were designated as "product of risk concerns", and the safety and labelling standards were established. Recently, the Government is working to introduce the approval and authorization systems for biocidal substances and the products, so that only safe products can be placed on the market.

27. **Para 43**. As this issue requires a medical and scientific approach in its investigation, the judgement result of the Committee on Lung Injury Investigation regarding the causal relationship between respiratory diseases and usage of humidifier disinfectant was needed to be reflected in the criminal investigation. As such, it took quite a long time to investigate the numerous victims and those affiliated, and to analyze a large amount of baseline data. The Prosecutors' Office is conducting thorough investigation of all raised points of allegations.

28. **Para 45**. The decision was made in consideration of evidence presented until the closure of first-instance defense arguments. The court deemed the government does not hold the responsibilities of intention, negligence, etc. based on the factual grounds that "it is difficult to recognize the fact that the humidifier disinfectant caused deaths by acute interstitial lung disease to other infants and children prior to the deaths of plaintiff's children." The case remains pending in the Seoul High Court as case number 2015Na2014486 as an appeal was filed by the plaintiffs.

B. Workers

29. **Para 63**. Once an accident has been confirmed as a work-related one, benefits, such as medical care benefits intended to cover medical treatment, wage replacement benefits for period during which the worker is unable to work due to medical care, disability benefits, survivors benefits for bereaved families and nursing benefits, are paid to help the worker achieve an income level equivalent to that he or she enjoyed before the accident. Apart from such benefit payments, various compensatory supports, including rehabilitation support, psychotherapy, counselling program, vocational training and livelihood security loans, are provided to help the worker promptly recover his or her condition prior to the accident.

30. **Para 75**. Although it is a general principle that the burden of proof falls on the claimant, it is not easy for workers suffering from work-related diseases to prove causation. Considering this, the Korea Workers' Compensation and Welfare Service enhanced its accident investigations, including on-site investigations and request for workplaces to submit related data. In addition, the burden of proof imposed on workers has been reduced by further specifying and subdividing criteria for recognizing work-related diseases and adding new criteria for diseases that were not recognized before. 14 carcinogens, 14 substances that can cause respiratory diseases, 8 substances that can cause acute poisoning, 35 new hazards, and new diseases, including 12 occupational cancers, chronic obstructive pulmonary disease, posttraumatic stress disorder and hypothermia, were added in June 2013. The Government will continue its efforts to improve the industrial accident compensation insurance system to better protect workers' rights and interests.

31. **Para 75**. The Government significantly improved the criteria for recognizing work-related diseases in 2013. For example, the criteria for recognizing occupational cancers were revised in 2013 to expand the scope of hazardous substances, such as X-ray and gamma-ray, from 11 to 23 substances and the scope of occupational cancers from 9 to 21 cancers.

32. **Para 76**. Immediate reporting obligation of all chemical accidents in all business sites was introduced in 2015 with the general revision of TCCA for the purpose of ensuring all relevant government agencies and stakeholders jointly respond to chemical accidents to prevent adverse impacts of chemical accidents from being proliferated.

C. Children

33. **Para 87**. The Ministry of Education and the Ministry of Culture, Sports and Tourism jointly provided funds and have completed replacing the artificial grass in all 173 primary, secondary and specialized schools which were found to have toxic substances above the permissible levels from 2015 to May 2016. Furthermore, municipal offices of education carry out inspections every three to five years to test for toxic substances in the artificial grass in school playgrounds to ensure students' safety.

34. **Para 89**. In an effort to protect the health of people including children from hazardous substances, relevant ministries and agencies of the Government together establish the Comprehensive Plan on Environmental Health every 10 years pursuant to the *Environmental Health Act*. Meanwhile, the Environmental Health Committee, which consists of relevant government agencies and experts, was organized and operated to discuss and deliberate matters relating to environmental health.

D. Communities living close to hazardous conditions

35. **Paras 93-96**. Recognizing significantly increasing environment-related complaints from areas around Geomuldae-ri, Gimpo where many small-scale factories stood, the Government has taken measures as follows. First, in February 2015, the Government conducted a massive crackdown on 86 business sites located in the area concerned. Of those, 62 business sites were found to violate laws. They were either prosecuted or taken under administrative measures. Especially, ten foundries caught emitting certain hazardous air pollutants were ordered to shut down. From May 2015 to April 2016, nationwide inspections were conducted targeting those areas in similar conditions with Gimpo, and the offenders were later brought to appropriate legal or administrative measures. Second, the Government recognizes the need to enhance current site regulations in order to prevent small-scale business sites from crowding within areas like Gimpo. Thus, the Government is preparing to establish a legal basis that would enable local governments to put restrictions on factory installation with their own discretion considering their circumstances, and is promoting strengthened environmental impact assessment when reviewing an authorization for installation of small-scale business sites.

36. **Para 98**. In 2014, the Chungcheongnam-do government carried out a survey on medical history of residents living in three areas in Chungcheong Province: near Dangjin's coal-fired thermal power plants, Dangjin steel mill complex, and Daesan petrochemical complex. The survey had two control groups consisting of residents in Cheongyang and Hongseong in Chungcheong Province. The survey analyzed heavy metals in blood sample including lead and cadmium, and in urine sample including mercury, arsenic, and cadmium. The survey found that residents living near Dangjin coal-fired thermal power plant had slightly higher levels of heavy metals in blood and urine, compared to the two control groups. However, the levels were below the WHO standards for heavy metal concentrations in human body. As of 2016, the Government is developing a plan for health impact surveys on residents living near power plants. The surveys are expected to be carried out from 2017 in a phased manner.

37. **Para 99**. The exclusion area of nuclear facilities in the Republic of Korea is regulated and overseen in accordance with the *Nuclear Safety Act* and its subordinate statutes (enforcement decrees, regulations on technical standards, notices). The scope of the exclusion area is to be within an area in which the range of exposure dose to residents is below the permissible levels for a fixed amount of time when an accident regarding radioactive material leakage occurs. The scope of the exclusion area ranges from 914m to 560m, considering the architectural design characteristics of nuclear facilities and meteorological conditions at facility sites.

38. **Para 100**. Relevant studies including that of the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) indicates that there is no evidence that low radiation dose could cause cancers and that only effective dose with high radiation in excess of 0.1 Sv(100 mSv) could cause cancers. Accordingly, the connection between living nearby nuclear facilities and having cancer is not yet established as no case has been confirmed in which residents got cancer by being exposed to radiation under 0.1 mSv from nearby nuclear power plants.

39. **Para 103**. The Ministry of Environment and the Ministry of National Defense performed several investigations on environmental damage and epidemiological surveys in Boryeong, Chungcheong Province, and are making efforts to prevent environmental damages. In 2011, the Ministry of Environment asked the Korea Environment Corporation to conduct an investigation on environmental pollution in and around the air force shooting range and adjacent area in Boryeong. The investigation found that contaminants in the soil did not exceed permissible levels, while PCE (tetrachloroethylene) in ground water was

higher than its permissible level in some wells. The Government requested the Boryeong-si government to close down the wells and conduct monitoring on the wells outside the air force base. Boryeong city completed the shutdown of the concerned wells and has been carrying out the monitoring every year. In addition, the National Institute for Environmental Research (NIER) under the Ministry of Environment conducted epidemiological surveys on cancer rates in the adjacent villages from April 2012. The survey found the cancer incident rate was no higher than the city averages as well as unusual carcinoma related to environmental contamination. In order to prevent proliferation of hazardous substance caused by wastes from the firing exercise, the Ministry of National Defense and Air Force have been collecting empty cartridges every year since 2009. Also, every three years since 2009, maritime environment impact investigation has been conducted on sea water and maritime sediment in the vicinity of the shooting range. The results of most recent investigation in 2015 shows that there were no contaminations for all categories.

40. **Para 106(d)** Victims of environmental pollution such as those of the Gimpo case can file a lawsuit against the polluter companies. Otherwise, they can request an environmental dispute adjustment under the *Environmental Dispute Adjustment Act* which is an alternative way of dispute resolution.

41. As the *Act on Liability for Environmental Damage and Relief Thereof* entered into force in 2016, a legal basis has been established for prompt and full relief of damages from environmental pollution caused by business activities. The Act includes provisions on no-fault liability of business owners, presumption of causal relationship between environmental pollution and damage, victims' strong right to request information, business owners' obligation to purchase environmental liability insurance, and payment of "relief money" to victims.

V. Conclusion

42. In conclusion, the Government of the Republic of Korea would like to assure the SR of its continuous support for his mandate and wish to thank him again for the report on his mission to the country.

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Promotion and protection of all human rights, civil, political, economic, social and cultural rights, including the right to development

Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes on his mission to Germany: comments by the State*

* Reproduced as received.

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1. Germany thanks the Special Rapporteur for presenting his report. The Federal Government would like to make the following remarks.

2. The government notes that the following comments refer to the report of the Special Rapporteur of 29 of August 2016. The remarks to the report are partial; they do not cover the entirety of the subjects covered in the report.

II. Comments on the legal framework and the report's implementation

A. Industrial Chemicals

17. In general the proposal can be generated by the Member State authorities and ECHA, under certain conditions. Industry can also deliver proposals for harmonized classification.

19. The German Ministry of Environment has taken a study on its own initiative, which documented that it remains to be clarified for the vast majority of high tonnage substances in the EU whether sufficient information on prenatal developmental toxicity and toxicity for reproduction is available.

The mentioned study showed the following:

- No data for reproductive toxicity were available for 11% of the high tonnage substances.
- For 73% of the substances the requirements were adapted (= justified data waiving or other than standard data). This data may deliver sufficient information on reproductive toxicity/developmental toxicity. However, this evaluation will only be performed in the future and is currently not known.
- 5% of the data were available in clear compliance with REACH (= study according to the correct international guideline with the actual substance).

Therefore, it may be misleading to say that only 5% of the substances have the information required as for further 73% this may be the case (cf. page 92 in the study report https://www.umweltbundesamt.de/publikationen/reach-compliance-data-availability-of-reach).

C. Energy production

42. The *Energiewende* can only be successful if the energy from renewable sources remains affordable to final consumers and if it doesn't hamper the international competitiveness of German businesses. Hence, wind power and solar power will become the most important energy sources.

43. The existing technological options for the generation, storage and distribution of renewable energy are sufficient to reach the ambitious targets of the Energiewende. Nevertheless, the German government supports of research and development activities in this field as there is always room for improvement.

F. Shipbreaking

Germany remarks that no meeting took place between the Special Rapporteur and the German Ship Owners' Association and the Federal Ministry of Transport.

55. The claim that German ship owners, in 2014, sold a record high of 95% of their end-of-life tonnage for substandard breaking on the beaches of South Asia, is questionable. It remains unclear how many ships are taken into consideration, and how a German-owned ship was defined. Normally ships from German owners are being sold into the second market. Ships from German owners are in general too young for scrapping.

With regard to working conditions and environmental conditions prevailing in many shipbreaking yards, as reported by the Special Rapporteur, Germany notes that this was the reason why the Hong Kong International Convention for safe and environmentally sound recycling of ships (HKC) was negotiated and agreed upon in 2009. Until today there are 4 parties to this convention.

56. Germany led a very active role on the development of the Hong Kong Convention (HKC) of 2009. The HKC will be legally binding if it comes into force.

It should be noted that no o ship can be detained to leave a port if there is no information that this ship is waste. It should also be stated that the Basel Convention does not apply if ships become waste on the high sea and the Convention is therefore not workable for ship recycling.

57. As regards the deliberations at Basel level on the equivalent level of control and enforcement between the Basel and Hong Kong conventions, see http://www.basel.int/Implementation/ShipDismantling/LegalAspects/Overview/tabid/2766/Default.aspx.

G. International Trade & deregulatory pressures

59. The German government highlights the importance of the EU environmental standards, which must not be lowered by the envisaged TTIP's regulatory objectives. The current proposals are still being evaluated.

III. Initiatives for stronger protection of human rights

B. Public participation in decision-making

75. REACH processes are also highly transparent. In fact, all processes leading to risk management foresee public consultations; stakeholders may participate as observes in the ECHA committee meetings when hazards and risks are assessed. The final outcome of the assessments and responses to all comments received during public consultation are published.

C. The right to an effective remedy

77. In Germany, the statute of limitations to access a remedy for environmental harm is three years, starting with the knowledge of damage, 10 years without such knowledge as far as it concerns damage to property and 30 years without such knowledge as far as it concerns personal injury.

IV. Issues in focus – domestic concerns

A. Child and adult exposure to toxics

91. Germany protects and fulfils the right of the child to health and has an effective legal framework for protecting the young and promoting their welfare. Germany's universal health care system provides coverage for all children who reside in Germany.

95. It is important to note that the Toy Safety Directive requires manufacturers to make sure that toys are manufactured in accordance with all safety requirements and that there is no risk of adverse effects on human health due to exposure to chemicals which toys contain (Dir. 2009/48/EC Art. 4 (1), Art. 10, Annex II particular safety requirements, Part III chemical Properties (1)) (BfR). Generally the manufacturer has to declare that each toy is compliant with the safety requirements of the Toy Safety Directive by a CE mark before placing it on the market, including a safety assessment of potential exposure to chemical hazards. Not all risks or safety requirements are addressed in the EU-standards.

97. Hazardous substances like CMRs in toys may result in health risk to children, because although the use is banned, by the way of derogation residue levels for human carcinogens up to the classification limits of mostly 0.1% (based on the CLP- regulation 1217/2008) are allowed.

Endocrine active phthalate softeners are forbidden in toys by REACH-regulation for years. Furthermore the flame retardants TCEP, TCPP and TDCP are forbidden in toys for children below the age of 3 years, this includes teddy bears. Moreover it should be noted that Formaldehyde is forbidden because it is carcinogen cat. 1B; it causes cancer only by inhalation and not by dermal exposure.

B. Risk assessment processes

Chemical Mixtures

103. In REACH, endocrine disrupting chemicals are considered of similar regulatory concern as CMR-, PBT- or vPvB-substances and thus are also regarded as "Substances of Very High Concern" (article 57f). It should be noted that for endocrine disruptors there is a need to demonstrate equivalent level of concern (compared to CMR, PBT and vPvB) before they can be included on the candidate list.

106. In this area, the Federal Institute for Risk Assessment conducted wide-ranging activities in 2015 and 2016 in order to avoid further delays in the formulation of scientific criteria for the identification of EDs by the Commission; Commissioner Andriukaitis explicitly thanked the Federal Institute for Risk Assessment for these efforts.